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Bureau of Land Management

Environmental Assessment
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December 2017 Competitive Oil and Gas Lease Sale

Location: Green River District, Price Field Office
Carbon County, Utah

Applicant/Address: U.S. Department of the Interior
Bureau of Land Management
Utah State Office
440 West 200 South, Suite 500
Salt Lake City, Utah 84145-0155

Price Field Office
125 South 600 West
Price, Utah 84501
435-636-3608
(435) 636-3657

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CHAPTER 1 - INTRODUCTION

1.1 PROJECT LOCATION AND LEGAL DESCRIPTION

The preliminary lease sale parcels are located in Emery County Utah approximately seven miles southeast of Ferron, Utah in Township 20 South Range 9 East, Township 21 South Range 9 East, and Township 21 South Range 8. Please see Appendix A and Map 1 in Appendix D.

1.2 BACKGROUND

It is the policy of the Bureau of Land Management (BLM), as derived from various laws, including the Mineral Leasing Act of 1920 (MLA) and the Federal Land Policy and Management Act of 1976 (FLPMA), to make mineral resources available for disposal and to encourage development of mineral resources to meet national, regional, and local needs.

Utah is a major source of natural gas for heating and electrical energy production in the lower 48 states. The continued sale and issuance of lease parcels facilitates exploration and production as oil and gas companies seek new areas for production or attempt to develop previously inaccessible or uneconomical reserves.

The BLM's Utah State Office conducts quarterly competitive lease sales to sell available oil and gas lease parcels. A Notice of Competitive Lease Sale, which lists lease parcels to be offered at the auction, is published by the Utah State Office at least 90 days before the auction is held. The lease stipulations applicable to each parcel are specified in the Sale Notice. The decision as to which public lands and minerals are open for leasing and what leasing stipulations may be necessary, based on information available at the time, are made during the land use planning process. Constraints on leasing and any future development of split estate parcels are determined by the BLM in consultation with the appropriate surface management agency or the private surface owner.

In the process of preparing a lease sale, the Utah State Office compiles a list of lands nominated and legally available for leasing and sends a preliminary parcel list to the appropriate District Office where the parcels are located. Field Office staff then review the legal descriptions of the parcels to determine if they are in areas open to leasing under the relevant Resource Management Plan (RMP) and that appropriate stipulations have been included; verify whether any new information has become available that might change any analysis conducted during the planning process; confirm that appropriate consultations have been conducted; and identify any special resource conditions of which potential bidders should be made aware. The BLM then prepares an analysis in compliance with the National Environmental Policy Act (NEPA), usually in the form of an Environmental Assessment (EA).

After the Field Office completes the draft parcel review and NEPA analysis and returns them to the State Office, a list of available lease parcels and associated stipulations and notices is made available to the public through a Notice of Competitive Lease Sale (NCLS). Lease sale notices are posted on the Utah BLM website at: http://go.usa.gov/xXk8ch. On rare occasions, the BLM may defer or withhold additional parcels prior to the day of the lease sale. In such cases, the BLM prepares an errata to the sale notice.

A draft of the EA and an unsigned Finding of No Significant Impacts (FONSI) (if appropriate) are made available to the public for a 30-day public comment period by posting the documents on the BLM National Register for NEPA documents. The link for the Price Field Office 2017 competitive oil and gas lease sale is https://go.usa.gov/xNwVK. Comments received from the public are reviewed and incorporated into the NEPA document, as applicable.

The EA, with any revisions determined appropriate following the public comment period, and, if still considered appropriate, an unsigned FONSI are again made available to the public through the concurrent posting of those documents and a NCLS at least 90 days in advance of the scheduled lease sale. The posting of the NCLS, EA and FONSI initiates a 30-day public protest period for the proposed lease sale offering that will end 60 days before the scheduled lease sale. The stipulations and notices applicable to each parcel proposed for lease will be specified in attachments to the NCLS. If any changes are needed to the parcels or stipulations and notices identified through the NCLS, an erratum is posted to the BLM Utah's Oil and Gas Leasing website, and in the public room of the BLM Utah State Office, in order to notify the public of any such changes. The lease parcels, as identified by the NCLS and any errata, would be offered for sale at a competitive lease sale tentatively scheduled to be held on December 14, 2017.

If the parcels are not leased at the December 2017 lease sale, then they will remain available to be leased noncompetitively for a period of up to two years to any qualified lessee at the minimum bid cost. Parcels obtained in this way may be re-parceled by combining or deleting other previously offered lands. Mineral estate that is not leased within a two-year period after an initial offering will no longer be available and must go through a competitive lease sale process again prior to being leased.

The act of leasing does not authorize any development or use of the surface of lease lands without further application by the operator and approval by the BLM. In the future, the BLM may receive Applications for Permit to Drill (APDs) for those parcels that are leased. If APDs are received, the BLM conducts additional site-specific NEPA analysis before deciding whether to approve the APD and what conditions of approval (COA) should apply.

The BLM has prepared this EA to disclose and analyze the environmental consequences of the leasing of 15 parcels during the December 2017 oil and gas lease sale. The EA is an analysis of potential impacts that could result from the implementation of a proposed action or alternatives to the proposed action. The EA ensures compliance with NEPA in making a determination as to whether any significant impacts could result from the analyzed actions. Significance is defined by NEPA and is found in 40 Code of Federal Regulations (CFR) § 1508.27. An EA provides evidence for determining whether to prepare an Environmental Impact Statement (EIS) or a FONSI statement. A FONSI statement, if applicable for this EA, would document the reasons why implementation of the selected alternative would not result in significant environmental impacts (effects) beyond those already addressed in the EIS prepared for the current land use plan: Price Field Office RMP (2008 PFO Record of Decision and Approved Resource Management Plan). If the decision maker determines that this project has significant impacts following the analysis in the EA, then an EIS would be prepared for the project. If not, a Decision Record (DR) may be signed for the EA approving the selected alternative, whether the Proposed Action or another alternative.

Fifteen parcels comprising 32,013 acres within the Price Field Office (PFO) were nominated for the December 2017 Competitive Oil and Gas Lease Sale. Fifteen parcels were determined to be open to leasing for oil and gas development under the Price Field Office RMP. This figure is comprised of 32,013 acres of federal land and 0 acres of split-estate land. The mineral rights for these parcels are owned by the federal government and administered by the PFO. The legal descriptions of the nominated parcels are in Appendix A.

This EA documents the review of the nominated parcels under the administration of the PFO. It serves to verify conformance with the approved land use plan and provides the rationale for the Field Office's recommendation to offer or to defer particular parcels from a lease sale. This EA is also being used to determine if the stipulations and lease notices attached to the parcels as part of the Proposed Action would be sufficient to protect resources and inform potential lessees of special conditions and restrictions that may constrain development. Additional lease notices may be developed during analysis, if warranted.

1.3 PURPOSE AND NEED

The purpose of the Proposed Action is to respond to the nominations or expressions of interest for oil and gas leasing on specific federal mineral estate through a competitive leasing process. The need for the Proposed Action is established by the BLM's responsibility under the Mineral Leasing Act (MLA) of 1920, as amended, the Mining and Minerals Policy Act of 1970, the Federal Onshore Oil and Gas Leasing Reform Act of 1987 (Reform Act), and the Federal Land Policy and Management Act (FLPMA) and to promote the development of oil and gas on the public domain. Parcels may be nominated by the public, the BLM or other agencies. The MLA establishes that deposits of oil and gas owned by the United States are subject to disposition in the form and manner provided by the MLA under the rules and regulations prescribed by the Secretary of the Interior, where consistent with FLPMA and other applicable laws, regulations, and policies.

1.3.1 Decision to be Made

The BLM will decide whether to lease all, some, portions, or none of the nominated lease parcels and, if so, under what terms.

1.4 PLAN CONFORMANCE REVIEW

The Proposed Action was reviewed for conformance (43 CFR 1610.5, BLM 1617.3) with the following plan(s):

Name of Plan: Price Field Office Record of Decision and Resource Management Plan (RMP) [BLM 2008b]

Date Approved: October 2008

As amended by: Utah Greater Sage Grouse Proposed Land Use Plan Amendment and Final Environmental Impact Statement [BLM 2015] and Record of Decision

Date Approved: September 2015

Decision Language: The RMP designated approximately 1,910,000 acres of federal mineral estate open for continued oil and gas development and leasing. The RMP (with associated amendments) also describes specific stipulations that would be attached to new leases offered in certain areas. Under the Proposed Action, parcels to be offered would be leased subject to stipulations prescribed by the RMP. Therefore, the Proposed Action conforms to the fluid mineral leasing decisions in the RMP and subsequent amendments, and are consistent with the RMP's goals and objectives for natural and cultural resources.

The Proposed Action specifically conforms to the following RMP decisions:

MLE-5 (Page 125 PFO ROD/RMP)

The BLM has identified leasing allocations for all lands within the Price Field Office. In addition, the RMP describes specific lease stipulations (RMP, Appendix R-3) that apply to a variety of different resources including raptors, greater sage grouse, and big game habitat, as well as program-related Best Management Practices (RMP, Appendix R-14) that may be applied on a case-by-case basis, site-specific basis to prevent, minimize, or mitigate resource impacts (RMP, Map R-8).

MLE-6 (Page 125 PFO ROD/RMP)

Review all lease parcels prior to lease sale. If the Price Field Office determines that new resource data information or circumstances relevant to the decision is available at the time of the lease review that warrants changing a leasing allocation or specific lease stipulation, the Price Field Office will make appropriate changes through the plan maintenance or amendment process. The Price Field Office may also apply appropriate conditions of approval at the permitting stage to ensure conformance with the LUP and all applicable laws, regulations, and policies.

MLE-9 (Page 126 PFO ROD/RMP)

Oil and gas leasing management will be conducted as shown on Map R-25a.

- Areas open to leasing subject to the standard terms and conditions of the lease form (1,161,000 acres)
- Areas open to leasing subject to moderate constraints (timing limitations; controlled surface use (CSU), and lease notices) (467,000 acres)
- Areas open to leasing subject to major constraints (no surface occupancy (NSO)) (282,000 acres)
- Areas unavailable to leasing (569,000 acres)
  The combination of all restrictions on oil and gas development is shown on Map R-26a.

The Proposed Action is also consistent with the PFO ROD/RMP decisions and objectives as they relate to the management of the following resources (including but not limited to): air quality, BLM natural areas, cultural resources, recreation, riparian, soils, water, vegetation, fish and wildlife, and Areas of Critical Environmental Concern (ACEC). Additional RMP decisions are specified in Chapter 3 or the Interdisciplinary Team (ID team) checklist. In addition, site visits

were conducted by the PFO ID team of resource specialists for the proposed parcels to verify consistency with the PFO ROD/RMP.

Standard lease terms provide for reasonable measures to minimize adverse impacts to specific resource values, land uses, or users (Standard Lease Terms are contained in Form 3100-11, Offer to Lease and Lease for Oil and Gas, U.S. Department of the Interior, BLM, October 2008 or later edition). Compliance with valid, nondiscretionary statutes (laws) is included in the standard lease terms. Nondiscretionary actions include the BLM's requirements under federal environmental protection laws, such as the Clean Water Act, Clean Air Act, Endangered Species Act, National Historic Preservation Act, and Federal Land Policy Management Act, which are applicable to all actions on federal lands.

Once the lease has been issued, the lessee has the right to use as much of the leased land as necessary to explore for, drill for, extract, remove, and dispose of oil and gas deposits located under the leased lands, subject to the standard lease terms and additional restrictions attached to the lease in the form of lease stipulations (43 CFR 3101.1-2). Even if no restrictions are attached to the lease, the operations must be conducted in a manner that avoids unnecessary or undue degradation of the environment and minimizes adverse impacts to the land, air, water, cultural, biological, and visual elements of the environment, as well as other land uses or users. Also included in all leases are the two mandatory stipulations for the statutory protection of cultural resources and threatened or endangered species (BLM Handbook 3120-1), which are described in Section 2.3.2. BLM would also encourage industry to consider participating in EPA's Natural Gas STAR program. The program is a flexible, voluntary partnership wherein EPA works with companies that produce, process, transmit and distribute natural gas to identify and promote the implementation of cost-effective technologies and practices to reduce emissions of methane, a greenhouse gas.

1.4 PUBLIC PARTICIPATION

1.4.1 Scoping

The principal goal of scoping is to identify issues, concerns, and potential impacts that require detailed analysis. The BLM uses both internal and external scoping to identify potentially affected resources and associated issues.

Internal scoping was initiated on March 6, 2017 when the nominated lease parcels for the 2017 competitive oil and gas lease sale were presented to the PFO ID team. Follow-up meetings and site visits with the various resource specialists of the PFO ID team were all used to help identify the following issues:

Air Quality

How would fugitive dust, pollutants, and other emissions that could result from leasing the proposed parcels impact air quality?

Areas of Critical Environmental Concern

How will leasing the proposed parcels impact the relevant and important cultural values of the Dry Wash, Molen Seep, and North Salt Wash Rock Art ACECs?

Cultural Resources

What impact will leasing the proposed parcels have on known and unknown historic properties?

Greenhouse Gas Emissions

How would oil and gas development operations that could result from leasing the proposed parcels impact greenhouse gas emissions?

Lands with Wilderness Characteristics

How would leasing the proposed parcels impact the size, naturalness, solitude, and/or opportunities for primitive and unconfined recreation of lands with wilderness characteristics?

Recreation

What impact will leasing the proposed parcels have on the recreation experience and opportunities that are mandated for the San Rafael Swell Special Recreation Management Area (SRMA) in the PFO RMP?

Threatened, Endangered, Candidate, or Sensitive Plant Species

What impact will leasing the proposed parcels have on endangered, threatened, candidate, and sensitive plant species that are present within the parcels?

Visual Resources

How will oil and gas development that could result from the leasing the proposed parcels impact the scenic quality of the area?

Appendix F (ID Team Checklist) offers a detailed list and rationale for resources/issues determined by the PFO ID team not to have the potential to be significantly impacted by any of the alternatives and, therefore, are dismissed from detailed analysis.

1.4.2 Public Comment Period

The preliminary EA and the unsigned Finding of No Significant Impact (FONSI) are available for a 30-day public review and comment period beginning June 22, 2017 and ending July 24, 2017. The document is available online at https://go.usa.gov/xNwVK and in the public room at the Price Field Office. The document may be viewed at the field office during regular business hours (7:45 a.m. to 4:30 p.m.), Monday through Friday, except holidays. Comments can be submitted by any of the following methods:

Online

https://go.usa.gov/xNwVK

Email

blm_ut_pr_mail@blm.gov

Mail

125 S 600 W
Price, Utah 84501

All comments must be received by close of business on July 24, 2017. Comments received from the public will be reviewed and incorporated into the EA as appropriate.

1.5 RELATIONSHIP TO STATUTES, REGULATIONS, POLICIES OR OTHER PLANS

The Proposed Action is in compliance with federal environmental laws and regulations, Executive Orders, and Department of Interior and BLM policies and is consistent, to the maximum extent possible, with state laws and local and county ordinances and plans, including the following:

- Federal Land Policy and Management Act (1976) as amended and the associated regulations at 43 CFR Part 1600
- Mineral Leasing Act (1920) as amended and the associated regulations at 43 CFR Part 3100
- BLM Utah Riparian Management Policy (2005)
- National Historic Preservation Act (1966) as amended and the associated regulations at 36 CFR Part 800
- Endangered Species Act (1973) as amended
- BLM Manual 6840- Special Status Species Management
- Bald and Golden Eagle Protection Act (1962)
- Migratory Bird Treaty Act (1918)
- Utah Partners in Flight Avian Conservation Strategy Version 2.0 (Parrish et al., 2002)
- Birds of Conservation Concern 2002 (USFWS 2008)
- Executive Order 13186: Responsibilities of Federal Agencies to Protect Migratory Birds
- MOU between the USDI BLM and USFWS to Promote the Conservation and Management of Migratory Birds (April 2010)
- BLM Manual 6310 - Conducting Wilderness Characteristics Inventory of BLM Lands
- BLM Manual 6320 - Considering Lands with Wilderness Characteristics in the BLM Land Use Planning Process
- BLM Handbook 3120-1 Competitive Leases (P)
- MOU Among the USDA, USDI and EPA Regarding Air Quality Analysis and Mitigation for Federal Oil and Gas Decisions Through the NEPA Process (2011)
- Protection of Ground Water Associated with Oil and Gas Leasing, Exploration and Development (BLM UT IM 2010–055)
- BLM-Utah Guidance for the Lands with Wilderness Characteristics Resource (IM UT 2016-027)

These documents, and their associated analysis or information, are hereby incorporated by reference, based on their use and consideration by various authors of this document. The attached Interdisciplinary Team Checklist, Appendix F, was also developed after consideration of these

documents and their contents. Each of these documents is available for review upon request to the PFO.

1.6 DOCUMENTS INCORPORATED BY REFERENCE

In order to reduce redundant paperwork and analysis in the NEPA process (*See* 40 CFR §§ 1502.20 and 1502.21) the following documents and their associated information or analysis are hereby incorporated by reference.

1.6.1 EISs, EAs and Decision Documents

- Price Field Office Final Environmental Impact Statement (FEIS) and Proposed Resource Management Plan (PRMP) [BLM 2008a]
- Price Field Office Record of Decision and Approved Resource Management Plan (ROD/RMP) [BLM 2008b]
- Biological Opinion for the Price BLM Resource Management Plan [USFWS 2008]
- Utah Greater Sage Grouse Proposed Land Use Plan Amendment and Final Environmental Impact Statement [BLM 2015] and Record of Decision
- Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement and Record of Decision [BLM 2007]

CHAPTER 2 - ALTERNATIVES

2.1 INTRODUCTION

This chapter describes the alternatives analyzed in detail. Alternatives considered but not analyzed in detail are also discussed.

2.2 REASONABLY FORESEEABLE DEVELOPMENT SCENARIO

Although at this time it is unknown when, where, or if future well sites or roads might be proposed on any leased parcel, should a lease be issued, site-specific analysis of individual wells or roads would occur when a lease holder submits an APD.

The Reasonably Foreseeable Development (RFD) scenario from Appendix M of the PFO FEIS for the RMP serves as an analytical baseline for identifying and quantifying direct, indirect, and cumulative effects of oil and gas activity and forms the foundation for the analysis of the effects of oil and gas management decisions in planning and environmental documents. It is assumed that each lease sold will have one well pad and access road and that the well pad and access road will be estimated to disturb 7.9 acres. With 15 proposed leases, the total estimated surface disturbance would be 118.5 acres.

The following sections provide a general discussion of possible post-leasing RFD activities. All of these activities would require additional NEPA review.

2.2.1 Well Pad and Road Construction

Equipment for well pad and road construction would consist of dozers, scrapers, and graders. Topsoil from each well pad and road would be stripped to depth and stockpiled for future reclamation. The topsoil would be seeded with native species of plants and left in place for the life of the well, then used during the final reclamation process or in the case of a road placed along the side of the road and seeded. Disturbance for each well pad could range from 1.0 acre to up to 3.5 acres depending on numerous factors such as depth of well and type of well drilled (vertical, directional, horizontal). The road disturbance for each well could be up to 6.4 acres depending on the length of road required. The estimated total disturbance for one well pad and access road is estimated to be 7.9 acres.

2.2.2 Well Drilling and Completion Operations

A drilling rig would be transported to the well pad (along with other necessary equipment). Drilling would commence with well spud. Typical drilling operations would include: adding joints of drill pipe at the surface as the hole deepens; circulating drilling fluids to cool the drill bit and remove the drill cuttings; pulling the drill pipe from the hole to replace worn drill bits; and setting strings of casing and cementing them in place. Air and/or water-based drilling fluid may be used to drill the hole. Prior to setting the production casing, open-hole well logs may be run to identify potentially productive horizons. If the evaluation concludes that sufficient natural gas and/or oil are present and recoverable, steel production casing would be installed and cemented in place. Drilling activities on a well would typically occur 24 hours per day, seven days per week, and would require approximately 20 workers. It could require from two to four weeks to drill a well depending on the depth and complexity of the well.

Once a well has been drilled and evaluated to have sufficient oil and/or natural gas, completion operations would begin. Well completion involves perforating the production casing in target zones, followed by hydraulic fracturing (fracking) of the formation. Fracking operations include injecting an agent (e.g., water, gel, liquid, carbon dioxide, and/or nitrogen) into the formation under pressure. The fracking agent would likely contain sand or other proppant material to keep the fractures from closing, thereby allowing fluids to be produced from the formation. The next phase of completion would be to flow and test the well to determine rates of production.

Typical equipment and vehicles used during completion activities might include carbon dioxide tanker trucks; sand transport trucks; water trucks; oil service trucks used to transport pumps and equipment for fracking; flat beds and gin trucks to move water tanks, rigs, tubing, and fracking chemicals; logging trucks (cased hole wireline trucks); pickup trucks to haul personnel and miscellaneous small materials; and workover rigs.

Completion activities on individual wells may occur 24 hours per day, seven days per week, and would require approximately 20 to 40 workers. Completion of an individual well could take from 7 to 30 days, depending on the number of completion zones.

Hydraulic Fracturing

Fracking is a well stimulation technique used to increase oil and gas production from underground rock formations. Fracking will also be evaluated at the APD stage should the lease parcel be sold/issued and a development proposal submitted. The following paragraphs provide a

general discussion of the fracking process that could potentially be implemented if development were to occur, including well construction information and general conditions encountered within the PFO.

Fracking involves the injection of fluids through a wellbore under pressures great enough to fracture the oil and gas producing formations. The fluid is generally comprised of a liquid such as oil, carbon-dioxide or nitrogen, and proppant (commonly sand or ceramic beads), and a minor percentage of chemicals to give the fluid desirable flow characteristics, corrosion inhibition, etc. The proppant holds open the newly created fractures after the injection pressure is released. Oil and gas flow through the fractures and up the production well to the surface.

Fracking has been used by oil and natural gas producers since the late 1940s and for the first 50 years was mostly used in vertical wells in conventional formations. Fracking is still used in these settings, but the process has evolved. Technological developments (including horizontal drilling) have led to the use of fracking in unconventional hydrocarbon formations that could not otherwise be profitably produced.

The use of horizontal drilling through unconventional reservoirs combined with high-volume water based multi-stage fracking activities has led to an increase in oil and gas activity in several areas of the country which has, in turn, resulted in a dramatic increase in domestic oil and gas production nationally. However, along with the production increase, fracking activities are suspected of causing contamination of fresh water by creating fluid communication between oil and gas reservoirs and aquifers. The Environmental Protection Agency (EPA) recently conducted an assessment of fracking on drinking water resources (https://www.epa.gov/hfstudy) [EPA 2016c].

Oil and Gas Fields

The nearest oil and gas field (Ferron Field) to the proposed lease parcels is approximately 10 miles to the northwest.

2.2.3 Production Operations

If a well is determined to be commercially productive, production facilities (gas meters, oil and water tanks, separators, etc.) would be installed on the well pad. Fluids such as oil, condensate, and produced water would likely be transferred to trucks as necessary and transported for sale or to an approved disposal site.

2.2.4 Produced Water Handling

Water is often associated with either produced oil or natural gas. Water is separated out of the production stream and can be temporarily stored in the reserve pit for 90 days. Permanent disposal options include surface discharge pits or underground injection. Handling of produced water is addressed in Onshore Oil and Gas Order No. 7, which prescribes measures required for the protection of surface and ground water sources.

2.2.5 Maintenance Operations

Wells are usually visited by a pumper on a daily basis to visually inspect equipment, gauges, etc. Well maintenance activities would occur on a year round basis.

2.2.6 Plugging and Abandonment

If the wells do not produce economic quantities of oil or gas, the well would be plugged and abandoned. The wells would be plugged and abandoned following specifications from a BLM Petroleum Engineer, which would include requiring cement plugs at strategic positions in the well bores. All fluids in the reserve pit would be allowed to dry prior to reclamation work. After fluids have evaporated from the reserve pit, sub-soil would be backfilled and compacted within 90 days. If the fluids within the reserve pit have not evaporated within 90 days, the fluid would be pumped from the pit and disposed of in accordance with applicable regulations. The well pad would be recontoured, and topsoil would be replaced, scarified, and seeded within 180 days of the plugging the well. Reclamation would meet the objectives described in the Green River District Reclamation Guidelines (IM UTG000-2011-003).

2.3 ALTERNATIVES ANALYZED IN DETAIL

2.3.1 No Action Alternative

The No Action Alternative provides a baseline for comparing environmental effects of the Proposed Action alternative. In the case of this lease sale, the leasing of the nominated parcels would not take place. The BLM would defer all nominated lease parcels from the December 2017 lease sale. The parcels could be considered for inclusion in future lease sales. Surface management would remain the same.

2.3.2 Proposed Action - Lease Nominated Parcels

Under this alternative, the BLM would lease Federal mineral estate of the nominated parcels available for leasing in the resource area in accordance with the PFO RMP [BLM 2008b]. The current lease sale includes parcels in Emery County. Those lands proposed for lease under this alternative total 32,013 acres of Federal mineral estate with federal surface (see Appendix A). The lands have been grouped into appropriate lease parcels for competitive sale as oil and gas leases in accordance with the 43 CFR 3100 regulations. The leases would include the standard lease terms and conditions for development of the surface of oil and gas leases provided in 43 CFR 3100. Stipulations to protect other surface and subsurface resources would also apply, as prescribed by the RMP. These stipulations are described in Appendix A.

Table 2-1: Acreage of Leasing Categories

Leasing Category	Total Acreage within Proposed Lease Parcels	Percent of Proposed Lease Parcels
Open	23,983 acres	75%
Controlled Surface Use	5,835 acres	18%
No Surface Occupancy	2,194 acres	7%

Table 2-2: Acreage of Leasing Categories per Parcel

Parcel #	Open	Controlled Surface Use	No Surface Occupancy
088	2,096 acres	-	-
089	2,333 acres	-	89 acres
090	2,323 acres	-	236 acres
091	2,497 acres	-	63 acres
092	1,270 acres	-	8 acres
093	1,567 acres	-	353 acres
094	2,132 acres	-	388 acres
095	938 acres	-	199 acres
096	497 acres	1,470 acres	189 acres
097	133 acres	1,697 acres	86 acres
098	2,026 acres	-	60 acres
099	874 acres	1,468 acres	49 acres
100	2,074 acres	-	442 acres
101	1,431 acres	634 acres	33 acres
102	1,793 acres	566 acres	-

The leases would include the standard lease terms and conditions for development of the surface of oil and gas leases provided in 43 CFR 3100. Stipulations to protect other surface and subsurface resources would also apply, as prescribed by the RMP. These stipulations are described in Appendix A.

H-3120-1, the Competitive Leasing Handbook also requires the following two standard stipulations be added to every lease:

Cultural Resources Stipulation

This lease may be found to contain historic properties and/or resources protected under the National Historic Preservation Act, American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, E.O. 13007, or other statutes and executive orders. The BLM will not approve any ground disturbing activities that may affect any such properties or resources until it completes its obligations under applicable requirements of the NHPA and other authorities. The BLM may require modification to exploration or development proposals to protect such properties, or disapprove any activity that is likely to result in adverse effects that cannot be successfully avoided, minimized or mitigated.

Endangered Species Act Stipulation

The lease may now and hereafter contain plants, animals, and their habitats determined to be special status species. The BLM may recommend modifications to exploration and development proposals to further its conservation and management objectives to avoid BLM approved activity that will contribute to a need to list such a species or their habitat.

The BLM may require modification to or disapprove proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of a designated or proposed critical habitat. The BLM will not approve any ground-disturbing activity that may affect any such species or critical habitat until it completes its obligation under requirements of the Endangered Species Act as amended, 16 U. S. C. § 1531 *et seq*. including completion of any required procedure for conference.

CHAPTER 3 – AFFECTED ENVIRONMENT

3.1 INTRODUCTION

This chapter presents the potentially affected existing environment (i.e., the physical, biological, social, and economic values and resources) of the impact area as identified in the Interdisciplinary Team Checklist found in Appendix F. This chapter provides the baseline for comparison of impacts/consequences described in Chapter 4.

The CEQ Regulations state that NEPA documents "must concentrate on the issues that are truly significant to the action in question, rather than amassing needless detail" (40 CFR 1500.1(b)). While many issues may arise during scoping, not all of the issues raised warrant analysis in an EA. Issues will be analyzed if: 1) an analysis of the issue is necessary to make a reasoned choice between alternatives, or 2) if the issue is associated with a significant direct, indirect, or cumulative impact, or where analysis is necessary to determine the significance of the impacts.

3.2 GENERAL SETTING

The PFO is located in central Utah, east of the Wasatch Mountains. The proximity of the Wasatch Mountains exerts a strong influence on the climatology and meteorology of the area. Areas east of the Wasatch Range are characterized by hot, dry summers and cold, dry winters. Air movement at this latitude is predominately from the west and northwest year-round.

The lower elevations receive less than 10 inches of precipitation annually. Higher elevations of the PFO receive more than 14 inches of precipitation annually. Snow amounts also are low east of the Wasatch Mountains. Average maximum temperatures in the area range from 97°F in July to 33°F in January. Average minimum temperatures range from 7°F in January to 58°F in July (BLM 1997, BLM 1999).

The 15 proposed lease parcels are located in the central region of the PFO, which is made up of the San Rafael Swell. A dominant physical feature within the PFO is the San Rafael Swell occupying the majority of Emery County. This feature is a large northeast trending up warp approximately 75 miles long and 30 miles wide that is part of a much larger, double-plunging anticline structure. This large, regional fold exposes rocks of Pennsylvanian through Cretaceous age. Resistant beds of sandstone are exposed as hogbacks on the steeply upturned east flank of the anticline and are referred to locally as "reefs." Three perennial rivers (the Muddy, San Rafael, and Price) flow eastward into the Green and Colorado River system. All of the parcels under analysis are located in the San Rafael Swell.

3.3 RESOURCES/ISSUES BROUGHT FORWARD FOR ANALYSIS

3.3.1 Air Quality

Air quality is affected by various natural and anthropogenic factors. Industrial sources such as power plants, mines, and oil and gas extraction activities within Utah contribute to local and regional air pollution. Urbanization and tourism create emissions that affect air quality over a wide area. Air pollutants generated by motor vehicles include tailpipe emissions and dust from travel over dry, unpaved road surfaces. Strong winds can generate substantial amounts of windblown dust. Air pollution emissions are characterized as point, area, or mobile. Point sources are large, stationary facilities such as power plants and manufacturing facilities and are accounted for on a facility by facility basis. Area sources are smaller stationary sources and, due to their greater number, are accounted for by classes. Production emissions from an oil and gas well and dust from construction of a well pad would be considered area source emissions. Mobile sources consist of non-stationary sources such as cars and trucks. Mobile emissions are further divided into on-road and off-road sources. Engine exhaust from truck traffic to and from oil and gas locations would be considered on-road mobile emissions. Engine exhaust from drilling operations would be considered off-road mobile emissions.

The Clean Air Act required the Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. The Utah Division of Air Quality (UDAQ) is responsible to ensure compliance with the NAAQS within the state of Utah. Table 3-1 shows the NAAQS for the EPA designated criteria pollutants [EPA 2017b].

Table 3-1 National Ambient Air Quality Standards (NAAQS) for the EPA designated Criteria Pollutants

Pollutant	Averaging Time	National Ambient Air Quality Standards (NAAQS)		
		Primary		
		(ppm)	(ppb)	(ug/m^3)
Carbon Monoxide	1 hour	35 [(a)]	35,000	40,000
	8 hour	9 [(a)]	9,000	10,000
Lead	Rolling 3-month	---	---	0.15
Nitrogen Dioxide	1 hour	0.1	100 [(b)]	189
	Annual (Arithmetic Mean)	0.053	53	100
PM_{10}	24 hour	---	---	150 [(c)]
$PM_{2.5}$	24 hour	---	---	35 [(d)]
	Annual (Arithmetic Mean)	---	---	12.0 [(e)]
Ozone	8 hour	0.070 [(f)]	70	147

Sulfur Dioxide	1 hour	0.075	75 [g]	197

Note: **Bold** indicates the standard as written in the corresponding regulation. Other values are conversions.

[a] Not to be exceeded more than once per year.

[b] To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 100 ppb (effective January 22, 2010).

[c] Not to be exceeded more than once per year on average over 3 years.

[d] To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 $\mu g/m^3$ (effective December 17, 2006).

[e] To attain this standard, the 3-year average of the weighted annual mean PM2.5 concentrations from single or multiple community-oriented monitors must not exceed 12.0 $\mu g/m^3$. (effective December 14, 2012)

[f] To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.070 ppm.

[g] To attain this standard, the 3-year average of the 99th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 75 ppb (effective June 22, 2010).

[h] not to be exceeded more than two times per year.

[i] not to be exceeded more than two times in any five consecutive days.

Prevention of Significant Deterioration

Under the Prevention of Significant Deterioration (PSD) provisions of the Clean Air Act (CAA), incremental increases of specific pollutant concentrations are limited above a legally defined baseline level. Many national parks and wilderness areas are designated as PSD Class I. The PSD program protects air quality within Class I areas by allowing only slight incremental increases in pollutant concentrations. Areas of Utah not designated as PSD Class I are classified as Class II. For Class II areas, greater incremental increases in ambient pollutant concentrations are allowed as a result of controlled growth.

Hazardous Air Pollutants

Hazardous air pollutants (HAPs) are known or suspected to cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental impacts. The EPA has classified 187 air pollutants as HAPs. Examples of listed HAPs associated with the oil and gas industry include formaldehyde, benzene, toluene, ethylbenzene, isomers of xylene (BTEX) compounds, and normal-hexane (n-hexane).

The CAA requires the EPA to regulate emissions of toxic air pollutants from a published list of industrial sources referred to as "source categories." The EPA has developed a list of source categories that must meet control technology requirements for these toxic air pollutants. Under Section 112(d) of the CAA, the EPA is required to develop regulations establishing national emission standards for hazardous air pollutants (NESHAP) for all industries that emit one or more of the pollutants in major source quantities. These standards are established to reflect the maximum degree of reduction in HAP emissions through application of maximum achievable control technology (MACT). Source categories for which MACT standards have been implemented include oil and natural gas production and natural gas transmission and storage.

3.3.2 Areas of Critical Environmental Concern

Areas of Critical Environmental Concern (ACECs) are special management areas designated by BLM to protect significant historic, cultural, or scenic values; fish and wildlife resources; natural processes or systems; and/or natural hazards that have more than locally significant qualities, which give it special worth. Consequence, meaning, distinctiveness, or cause for concern especially compared to any similar resource. ACECs have qualities or circumstances that make them fragile, sensitive, rare, irreplaceable, exemplary, unique, endangered, threatened, or vulnerable to adverse change. They have been recognized as warranting protection in order to satisfy national priority concerns or carry out the mandates of Federal Lands Policy and Management Act (FLPMA) and have qualities, which warrant highlighting in order to satisfy public or management concerns about safety and public welfare.

Potential ACECs must meet the following criteria:

- Relevance: presence of a significant historic, cultural, or scenic value; fish or wildlife resource or other natural process or system; or natural hazard; and
- Importance: the above described value, resource, process, system, or hazard shall have substantial significance and values. This generally requires qualities of more that local significance and special worth, consequence, meaning, distinctiveness, or cause for concern.

The Approved RMP designated the Rock Art ACEC, which included 13 individual rock art sites. Three sites within the Rock Art ACEC are present within the nominated lease parcels: Molen Seep, North Salt Wash, and Dry Wash sites. The relevant and important value for the Rock Art ACEC is cultural resources. These sites contain "some of the best examples of prehistoric rock art on the Colorado Plateau" [BLM 2008a, L-16]. Tables 3-2 and 3-3 show the overall overlap of ACECs in the nominated lease parcel area and the per parcel occurrence of ACECs.

FLPMA requires the BLM to give priority to the designation and protection of ACECs. Protection is afforded by implementing management prescriptions set forth in the approved RMP. Lands within these ACECs are subject to the following special management prescriptions in the PFO RMP:

- Oil and gas will be open to leasing subject to major constraints (NSO)
- Excluded for ROW grants

Table 3-2: Overall Overlap of ACECs within Lease Parcel Area

Rock Art ACEC Site	Total Acreage of ACEC Site	Total Acreage of ACEC Site within Lease Parcels	Percent of Lease Parcel Area with ACEC
Molen Seep	634 acres	69 acres (11%)	<1%
North Salt Wash	1,118 acres	1,118 acres (100%)	3%
Dry Wash	1,137 acres	562 acres (49%)	2%
TOTAL	n/a	1,749 acres	5%

Table 3-3: Occurrence of ACECs within Each Nominated Lease Parcel

Parcel #	Molen Seep ACEC Site Acreage within Parcel	North Salt Wash ACEC Site Acreage within Parcel	Dry Wash ACEC Site Acreage within Parcel	Percent of Parcel Intersecting an ACEC Site
088	-	-	-	-
089	69 acres (3%)	-	-	3%
090	-	236 acres (9%)	-	9%
091	-	12 acres (<1%)	46 acres (2%)	2%
092	-	-	-	-
093	-	333 acres (17%)	-	17%
094	-	69 acres (3%)	318 acres (13%)	16%
095	-	-	198 acres (17%)	17%
096	-	-	-	-
097	-	-	-	-
098	-	-	-	-
099	-	-	-	-
100	-	434 acres (17%)	-	17%
101	-	33 acres (2%)	-	2%
102	-	-	-	-

3.3.3 Cultural Resources

Cultural resources are locations of human activity, occupation, or use identifiable though field survey, historical documentation, or oral history. The term includes archaeological, historic, and architectural sites, structures, and places with important public and scientific uses, and may include locations (sites or places) of traditional, religious, and cultural importance to specified social and/or cultural groups. Cultural resources are material places and things that are located, classified, ranked, and managed though the system of identifying, protecting, and utilizing for public benefit.

A number of documents were consulted to determine the nature and extent of cultural resources located within the proposed lease sale area. Survey reports and site forms were retrieved from the Utah State Historic Preservation Office's digital database, Preservation Pro. The Class I Inventory for the field office [Beck et al.2017], Native American consultation records associated with the identification of Traditional Cultural properties [Molenaar 2005a, Molenaar 2005b] and General Land Office Plats were also reviewed.

Eight cultural resource surveys have been completed within the proposed lease parcel boundaries (covering approximately 978 acres), resulting in a total survey coverage of 2.9%. Forty-one documented sites are located within the parcels, with an additional nineteen reported to the BLM by the Utah Rock Art Research Association and a private citizen, for a total of 60 known or reported sites. Of the forty-one documented sites, twenty-three are either recommended or determined eligible for listing to the National Register of Historic Places (NRHP). Site types include prehistoric artifact scatters, petroglyphs, pictographs, prehistoric structures, lithic

quarries, historic inscriptions, and a historic corral. Sites determined or recommended eligible for listing to the NRHP are considered historic properties. As required by 36CFR800.1(a) the BLM must take into account the effects of their undertakings on historic properties by following the process established in Section 106 of the National Historic Preservation Act and its regulations set forth in 36CFR800.

A majority of the previous cultural resource surveys conducted within the proposed lease area encompass very small tracts of land, however two of the surveys included survey blocks totaling 449 and 240.5 acres each. These larger surveys provide greater insight into the cultural resource nature and distribution for the greater lease sale area than the smaller localized surveys. These two surveys include a Class II Cultural Resources Survey of Castle Valley Oil and Gas Lease Areas in Emery, Utah: U-14-ST-1048b (Beck et al. 2015) and the Molen Reef Class II Probabilistic Field Survey, Emery County, Utah [*in draft* Patterson 2017].

The Castle Valley Oil Project employed a probabilistic sampling method to gather cultural resource data in the lease area. Twelve separate forty-acre blocks were selected for intensive pedestrian survey (15-meter transects), resulting in a total of 449.55 acres of survey. This survey resulted in the documentation of six prehistoric sites all of which are comprised of sparse amounts of lithic debitage and a limited amount of stone tools, such as bifaces. Approximately 130 flakes are present on one site, whereas the remaining sites containing less than 50 flakes, two of which contain only 14 flakes each.

Beck et al. (2014) conclude that in prehistory or in historic times, this area was not used in an intensive fashion. Regarding rock art in the study area:

> *large portions of the Castle Valley study area identified for the possible presence of rock art, including all four survey blocks selected for rugged topography, are dominated by geologic exposures of conglomerate, a rock type not commonly associated with the presence of rock art. Available information regarding the surface geology of the Castle Valley study area indicates that exposed rocks are generally middle to late Jurassic in age and not composed of early Jurassic sandstones more commonly associated with the presence of rock art. The two document rock arts sites identified in SWCA's file search for the study area are both in the deeply incised Red Hole Draw area, where stream cutting has exposed early Jurassic sandstones.*

Ferron sandstone is quite common in the lease area, however for rock art to be present there needs to be suitable rock outcrops, rather than sandstone cobbles on the surface. The placement of Ferron sandstone outcrops are not evenly distributed across the lease area. Most of the parcels in the eastern half contain very few rock outcrops. Therefore, the potential for rock art is not evenly distributed to each parcel, rather some parcels have a higher potential and others have relatively little chance of containing rock art.

In May 2017, Montgomery Archaeological Consultants conducted the *Molen Reef Class II Probabilistic Field Survey* as part of a larger Class I and Class II project focused on the area

surrounding the Molen Reef geologic feature. A total of 500 acres of survey was conducted by randomly placing 20 acre survey blocks within the rock art ACECs within the project boundary. The project boundary for the Molen Reef Class I and II included a larger area than the proposed oil and gas lease sale parcels, therefore only 240.5 acres of survey fell within the proposed lease sale parcels. The survey within the lease sale area resulted in the documentation of seven new cultural resource sites. These site consisted of rock art, historic inscriptions, lithic scatters, and Fremont artifact scatters. The results of the survey show that cultural resource site density varies within the ACEC areas. This suggests that particular regions of the Molen Reef are more conducive to cultural resources, and that the interface between sandstone cliffs and alluvial washes is only one contributing factor which influenced the prehistoric use of the Molen Reef area.

The low density of both rock art and cultural sites in the areas surveyed suggest that the type of geological formations within this area heavily influence the number and density of cultural resources within the area. Based on the observation made by SWCA in the Castle Valley report, the BLM compared known site data and sites reported by URARA with a map of geologic types. The comparison revealed that URARA's data and previously recorded site data occur in the areas dominated by sandstone. No previously documented or reported sites occur within areas dominated by shale. The data from the *Molen Reef Probabilistic Field Survey* also supports this observation.

3.3.4 Greenhouse Gas Emissions/Climate Change

"Climate change" refers to any significant change in the measures of climate lasting for an extended period of time. In other words, climate change includes major changes in temperature, precipitation, or wind patterns, among other effects, that occur over several decades or longer. "Global warming" refers to the recent and ongoing rise in global average temperature near Earth's surface. It is caused predominantly by increasing concentrations of greenhouse gases in the atmosphere. Global warming is causing climate patterns to change. However, global warming itself represents only one aspect of climate change. Climate is both a driving force and limiting factor for ecological, biological, and hydrological processes, and has great potential to influence resource management.

Climate change science continues to expand and refine our understanding of the impacts of anthropogenic GHG emissions. The Council on Environmental Quality's (CEQ) first Annual Report in 1970 referenced climate change, indicating that "[m]an may be changing his weather." It is now well established that rising global atmospheric GHG emission concentrations are significantly affecting the Earth's climate. These conclusions are built upon a scientific record that has been created with substantial contributions from the United States Global Change Research Program (USGCRP).[1] Studies have projected the effects of increasing GHGs on many resources normally discussed in the NEPA process, including water availability, ocean acidity, sea-level rise, ecosystem functions, energy production, agriculture and food security, air quality and human health.

[1] See Global Change Research Act of 1990, Pub. L. 101–606, Sec. 103 (November 16, 1990). For additional information on the United States Global Change Research Program [hereinafter "USGCRP"], visit http://www.globalchange.gov.

Based primarily on the scientific assessments of the USGCRP, the National Research Council, and the Intergovernmental Panel on Climate Change, in 2009 the Environmental Protection Agency (EPA) issued a finding that the changes in our climate caused by elevated concentrations of greenhouse gases in the atmosphere are reasonably anticipated to endanger the public health and public welfare of current and future generations. In 2015, EPA acknowledged more recent scientific assessments that "highlight the urgency of addressing the rising concentration of CO_2 in the atmosphere," [EPA 2015] finding that certain groups are especially vulnerable to climate-related effects. Broadly stated, the effects of climate change observed to date and projected to occur in the future include more frequent and intense heat waves, longer fire seasons and more severe wildfires, degraded air quality, more heavy downpours and flooding, increased drought, greater sea-level rise, more intense storms, harm to water resources, harm to agriculture, ocean acidification, and harm to wildlife and ecosystems.

This EA includes a qualitative and quantitative analysis of possible greenhouse gas emissions that could occur as a result of reasonably foreseeable oil and gas development associated with the parcels being offered for lease. Additional information about potential emissions would also be available and calculated as part of subsequent site-specific reviews at the APD stage.

It is accepted within the scientific community that global temperatures have risen at an increased rate and the likely cause is gases that trap heat in the atmosphere, referred to as greenhouse gases (GHG). GHGs are composed mostly of carbon dioxide (CO_2), nitrous oxide (N_2O), methane (CH4), water vapor, and ozone. The greenhouse gas effect is the process in which the radiation from the sun that heats the surface of Earth gets blocked by GHG molecules in Earth's atmosphere. Since GHGs are composed of molecules that absorb and emit infrared electromagnetic radiation (heat), they form an intrinsic part of the greenhouse effect.

Greenhouse gases are often presented using the unit of Metric Tons of CO_2 equivalent (MT CO_2e) or Million Metric Tons (MMT CO2e), a metric to express the impact of each different greenhouse gas in terms of the amount of CO2 making it possible to express greenhouse gases as a single number. For example, 1 ton of methane would be equal to 28-36 tons of CO_2 equivalent, because it has a global warming potential (GWP) over 25 times that of CO_2 [EPA 2017a].

As defined by EPA, the GWP provides "ratio of the time-integrated radiative forcing from the instantaneous release of one kilogram of a trace substance relative to that of one kilogram of CO_2." The GWP of a greenhouse gas is used to compare global impacts of different gases and used specifically to measure how much energy the emissions of one ton of gas will absorb over a given period of time (e.g. 100 years), relative to the emissions of one ton of CO_2. The GWP accounts for the intensity of each GHG's heat trapping effect and its longevity in the atmosphere. The GWP provides a method to quantify the cumulative effects of multiple GHGs released into the atmosphere by calculating carbon dioxide equivalent for the GHGs.

- Carbon dioxide (CO_2), by definition, has a GWP of 1 regardless of the time period used because it is the gas being used as the reference. CO_2 remains in the climate system for a very long time due to the natural carbon cycle, which continuously releases and absorbs carbon and carbon dioxide; Anthropogenic sources of CO_2 emissions have substantially increased since the Industrial Revolution causing increases in the atmospheric concentrations of CO_2 that will last thousands of years [EPA 2017a].

- Methane (CH_4) is estimated to have a GWP of 28-36 times that of CO_2 over 100 years. CH_4 emitted today lasts about a decade on average, which is much less time than CO_2. But CH_4 also absorbs much more energy than CO_2. The net effect of the shorter lifetime and higher energy absorption is reflected in the GWP. The methane GWP also accounts for some indirect effects, such as the fact that methane can act as a precursor to ozone formation, and ozone is in itself a greenhouse gas [EPA 2017a].

- Nitrous Oxide (N_2O) has a GWP of 265-298 times that of CO_2 for a 100-year timescale. N_2O emitted today remains in the atmosphere for more than 100 years, on average [EPA 2017a]. Table 3.4 contains GHGs regulated by EPA and global warming potentials.

Table 3-4. GHG Regulated by EPA and Global Warming Potentials

Air Pollutant	Chemical Symbol/Acronym	Global Warming Potential
Carbon Dioxide	CO_2	1
Methane	CH_4	28-36
Nitrous Oxide	N_2O	298
Hydrofluorocarbons	HFCs	Varies
Perfluorocarbons	PFCs	Varies
Sulfur hexafluoride	SF_6	22,800

Source: [EPA 2017a]

The IPCC concluded that "warming of the climate system is unequivocal" and "most of the observed increase in global average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic GHG concentrations." [IPCC 2007] Extensive research and development efforts are underway in the field of carbon capture and sequestration (CCS) technology, which could help direct management strategies in the future. The IPCC has identified a target worldwide "carbon budget" to estimate the amount of CO_2 the world can emit while still having a likely chance of limiting global temperature rise to 2°C above pre-industrial levels. The international community estimates this budget to be 1 trillion tonnes of carbon [IPCC 2016].

Because GHGs circulate freely throughout Earth's atmosphere, climate change is a global issue. The largest component of global anthropogenic GHG emissions is CO_2. Global anthropogenic carbon emissions reached about 7,000,000,000 MT per year in 2000 and an estimated 9,170,000,000 MT per year in 2010 [Boden et. al. 2013]. Oil and gas production contributes to GHGs such as CO_2 and methane. Natural gas systems were the second largest anthropogenic

source category of CH_4 emissions in the United States in 2015 with 162.4 MMT CO_2 e of CH_4 emitted into the atmosphere. Those emissions have decreased by 31.6 MMT CO_2 e (16.3 percent) since 1990 [EPA 2017b].

Global mean surface temperatures have increased nearly 1.0°C (1.8°F) from 1890 to 2006 [NASA 2007]. In 2001, the IPCC (2007) indicated that by the year 2100, global average surface temperatures would increase 1.4 to 5.8°C (2.5 to 10.4°F) above 1990 levels. The National Academy of Sciences [Hansen et al. 2006] has confirmed these findings, but also indicated that there are uncertainties regarding how climate change may affect different regions. Observations and predictive models indicate that average temperature changes are likely to be greater in the Northern Hemisphere. Data indicate that northern latitudes (above 24° N) have exhibited temperature increases of nearly 1.2°C (2.1°F) since 1900, with nearly a 1.0°C (1.8°F) increase since 1970 alone. It also shows temperature and precipitation trends for the United States. For both parameters we see varying rates of change, but overall increases in both temperature and precipitation.

In recent years, many states, tribes, and other organizations have initiated GHG inventories, tallying GHG emissions by economic sector. The U.S. EPA provides links to statewide GHG emissions inventories [EPA 2015]. Guidelines for estimating project-specific GHG emissions are available [URSC 2010], but some additional data, including the projected volume of oil or natural gas produced for an average well, number of wells (as well as other factors described in Section 4.2.1 Air Quality) were used to provide GHG estimates.

3.3.5 Lands with Wilderness Characteristics

Lands with wilderness characteristics are roadless areas having at least 5,000 acres (or meeting an exception in Manual 6310, such as being contiguous with a Wilderness Study Area) that appear to be in a natural condition and that provide outstanding opportunities for solitude and/or primitive forms of recreation.

There are two lands with wilderness characteristics units that could potentially be impacted by the Proposed Action: Eagle Canyon and Sids Mountain. Both of these lands with wilderness characteristics units were analyzed in the Price Field Office RMP and neither unit was carried forward in the Approved Price Field Office Resource Management Plan (RMP) for the protection and preservation of their wilderness characteristics. For the 15 proposed lease parcels, 94% of the acres within the nominated lease parcel are within lands determined to have wilderness characteristics. Table 3-5 shows the overlap of acreage of lands with wilderness characteristics units within the nominated lease parcels. Table 3-6 shows the percentage of lands with wilderness characteristics within each of the proposed lease parcels.

Table 3-5: Overlap of lands with wilderness characteristics for nominated lease parcels

Lands with wilderness characteristics unit	Acreage of lands with wilderness characteristics unit	Total acreage of lands with wilderness characteristics unit within nominated lease parcels	Percent of nominated lease parcels within a lands with wilderness characteristics unit	Percent of lands with wilderness characteristics unit that is overlapped by a nominated lease parcel
Eagle Canyon	38,662 acres	26,181 acres	82%	68%
Sids Mountain	4,060 acres	4,059 acres	12%	99.9%
TOTAL	42,722 acres	30,240 acres	94%	70.7%

Table 3-6: Overlap of lands with wilderness characteristics units and specific parcels

Parcel #	Eagle Canyon lands with wilderness characteristics unit acreage within parcel	Sids Mountain lands with wilderness characteristics unit Acreage within Parcel	Percent of lease parcel within a lands with wilderness characteristics unit
088	2,096 acres (100%)	-	100%
089	2,115 acres (87%)	-	87%
090	2,559 acres (100%)	-	100%
091	2,538 acres (99%)	-	99%
092	1,063 acres (83%)	-	83%
093	1,917 acres (99%)	-	99%
094	2,257 acres (90%)	-	90%
095	778 acres (68%)	-	68%
096	-	1,656 acres (77%)	77%
097	338 acres (18%)	1,550 acres (81%)	99%
098	2,018 acres (97%)	-	97%
099	1,529 acres (64%)	853 acres (36%)	100%
100	2,515 acres (100%)	-	100%
101	2,098 acres (100%)	-	100%
102	2,360 acres (100%)	-	100%

3.3.6 Recreation

As indicated in Table 3-7, the entirety of the 15 proposed lease parcels are within the San Rafael Swell Special Recreation Management Area (SRMA). Recreation objectives within the SRMA are recognized as a primary resource management consideration, and specific management is required to protect the recreation opportunities [BLM 2014]. Although there are no specific management decisions in the RMP restricting oil and gas development in the San Rafael Swell SRMA, the RMP management goal for the San Rafael Swell SRMA is to provide outstanding recreational opportunities and visitor experiences while protecting natural and cultural resource values.

The San Rafael Swell SRMA offers visitors the chance to experience remote, expansive, intact landscapes with little interaction and few restrictions. Known recreation activities in the portion of the SRMA with the proposed lease parcels include sightseeing, wildlife viewing, nature viewing, photography, hiking, horseback riding, ATV trail riding, and camping.

Additionally, the Head of Sinbad/Swaseys Cabin/Sids Mountain Recreation Management Zone (RMZ) exists within some of the proposed lease parcels, as shown in Tables 3-8 and 3-9. RMZs are subdivisions of a SRMA that delineate specific recreation opportunities. The Head of Sinbad/Swaseys Cabin/Sids Mountain RMZ, like the San Rafael Swell SRMA, offers a remote, expansive, intact landscape experience with little interaction and few restrictions. The primary activities include sightseeing, wildlife viewing, nature viewing, photography, hiking, horseback riding, ATV trail riding, and camping.

Table 3-7: Special Recreation Management Areas within Lease Parcel Area

Special Recreation Management Area	Total Acreage	Total Acreage within Lease Parcels	Percent of SRMA	Percent of Nominated Lease Parcels
San Rafael Swell	938,500 acres	32,010 acres	3%	100%

Table 3-8: Recreation Management Zones within Lease Parcel Area

Recreation Management Zone	Total Acreage	Total Acreage within Lease Parcels	Percent of RMZ	Percent of Nominated Lease Parcels
Sinbad/Swaseys/Sids	121,636 acres	5,434 acres	4%	17%

Table 3-9: Acreage and Percent of Parcel Overlap with the RMZ

Parcel #	Acreage of RMZ within Parcel	Percent of Parcel within RMZ
096	1,876 acres	87%
097	1,817 acres	95%
099	1,276 acres	53%
101	465 acres	22%
102	0.03 acre	<1%

As directed by the RMP, the San Rafael Swell SRMA is to be managed by the Recreation Opportunity Spectrum (ROS), which is a framework for defining classes of outdoor recreation environments, activities, and experience opportunities. There are three different classes of the ROS present within the proposed lease parcels: semi-primitive non-motorized, semi-primitive motorized, and roaded natural. Table 3-10 shows the total acreage and percentage of the proposed lease parcels with these three ROS classifications.

ROS Classification Standards

1. *Semi-Primitive Non-Motorized (SPNM):* As defined by the RMP, areas given the classification of SPNM have a natural setting with some subtle modifications. There is evidence of non-motorized trials, but little to no evidence of motorized routes. Furthermore, structures are rare and isolated within SPNM areas.
2. *Semi-Primitive Motorized (SPM):* As defined by the RMP, areas given the classification of SPM have a natural setting with moderate alterations. There is strong evidence of motorized trails, routes, and roads. Additionally, any structures will be isolated.
3. *Roaded Natural (RN):* As defined by the RMP, areas given the classification of RN have a natural setting with easily noticed or dominant modifications. There is strong evidence of maintained roads and highways, and there could potentially be scattered structures that are noticeable from travel routes.

Table 3-10: Recreation Opportunity Spectrum within Lease Parcel Area

ROS Classification	Total Acreage within Lease Parcels	Percent of Nominated Lease Parcels
Semi-Primitive Non-Motorized	7,693 acres	24%
Semi-Primitive Motorized	23,933 acres	75%
Roaded Natural	258 acres	0.8%

Table 3-11 shows the occurrence of each ROS classification within each of the proposed lease parcels.

Table 3-11: Recreation Opportunity Spectrum per Parcel

Parcel #	Acreage of SPNM within Parcel	Acreage of SPM within Parcel	Acreage of RN within Parcel
088	-	2,096 acres (100%)	-
089	-	2,421 acres (100%)	-
090	-	2,559 acres (100%)	-
091	-	2,559 acres (100%)	-
092	-	1,279 acres (100%)	-
093	141 acres (7%)	1,771 acres (92%)	
094	-	2,520 acres (100%)	-
095	-	879 acres (77%)	258 acres (23%)
096	837 acres (39%)	1,318 acres (61%)	-
097	888 acres (46%)	1,027 acres (54%)	-
098	231 acres (11%)	1,854 acres (89%)	-
099	1,118 acres (47%)	1,259 acres (53%)	-
100	1,031 acres (41%)	1,484 acres (59%)	-
101	1,315 acres (63%)	773 acres (37%)	-

102	2,132 acres (90%)	216 acres (9%)	-

3.3.7 Plants – BLM Sensitive Species

BLM's 6840 policy is to ensure that actions authorized on BLM lands do not contribute to the need to list Sensitive species [BLM 2008c]. Two Utah BLM Sensitive plant species have populations and/or suitable habitat identified within the Project Area, or have the potential to be affected by the Proposed Action, per review of BLM GIS data

Creutzfeldt flower *(Cryptantha creutzfeldtii)*

Creutzfeldt flower is a Utah BLM Sensitive plant species, endemic to Carbon and Emery counties. This member of the Borage family is a perennial herb. The plant produces white flowers. Known occurrences of the species are found growing in mancos shale in shadscale and mat saltbush communities. Based on appropriate geology and elevation and nearby known locations there is potential habitat in all proposed lease parcels.

Psoralea globemallow (*Sphaeralcea psoraloides*)

Psoralea globemallow is a Utah BLM Sensitive plant species. Endemic to Colorado Plateau in Emery, Grand, San Juan, and Wayne Counties, Utah. Occurs on Tununk Member of Mancos Shale, Buckhorn Conglomerate, Curtis sandstone, Entrada siltstone, Carmel, and Kaibab Limestone. Associated with Mormon tea, shadscale, and pinyon-juniper communities between 4,000' and 6,300' feet above sea level. Small patches of suitable habitat occur within all lease parcels. There are no known populations within the lease parcels at this time.

Table 3-12: Lease Notices Applies to Parcels for BLM Sensitive Species

Lease Notice	Parcel
UT-LN-51: Special Status Plants:	All

3.3.8 Visual Resources

The BLM's visual resource management (VRM) system is a way to identify and evaluate scenic values to determine the appropriate levels of management to apply to a defined area. VRM is a tool to identify and map essential landscape settings and develop management guidelines. It also provides a way to analyze potential visual impacts and apply visual design techniques to ensure that surface-disturbing activities are in harmony with their surroundings. The BLM's VRM system helps to ensure that actions taken on BLM-administered land will maintain the visual and scenic qualities associated with landscapes.

The BLM uses a visual resource inventory (VRI) and the resulting VRI classes to inform management decisions, including assignment of VRM classes to a given area. The VRI class does not always match the VRM class because the VRM class considers factors other than those used to establish the VRI classes. There are four VRM classes, which are described below in Table 3-13.

Table 3-13: Visual Resource Management Class Objectives

VRM Class	VRM Class Objectives
I	Preserve the existing character of the landscape. The level of change to the characteristic landscape should be very low and must not attract attention.
II	Retain the existing landscape character and the level of change to the characteristic landscape should be low. Management activities should not attract the attention of the casual observer. Changes would be required to repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape. Modifications to a proposal would be required if the proposed change cannot be adequately mitigated to retain the character of the landscape.
III	Partially retain existing landscape character. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate a casual observer's view. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.
IV	Provide for management activities which require major modification of the existing landscape character. Every attempt, however, should be made to reduce or eliminate activity impacts through careful location, minimal disturbance, and repeating the basic landscape elements.

VRM classes II, III, and IV are present within the proposed lease parcels, as shown in Table 3-14.

Table 3-14: Visual Resource Management Classes within Lease Parcel Area

VRM Class	Total Acreage within Lease Parcels	Percent of Nominated Lease Parcels
II	4,166 acres	13%
III	1,943 acres	6%
IV	25,837 acres	81%

Table 3-15 shows VRM classes within each of the proposed lease parcels.

Table 3-15: Visual Resource Management Classes per Parcel

Parcel #	Acreage of VRM Class II within Parcel	Acreage of VRM Class III within Parcel	Acreage of VRM Class IV within Parcel
088	-	-	2,096 acres (100%)
089	-	-	2,421 acres (100%)
090	-	-	2,559 acres (100%)
091	-	-	2,559 acres (100%)
092	-	-	1,279 acres (100%)
093	-	-	1,920 acres (100%)
094	-	-	2,520 acres (100%)

Parcel #	Acreage of VRM Class II within Parcel	Acreage of VRM Class III within Parcel	Acreage of VRM Class IV within Parcel
095	-	491 acres (43%)	644 acres (57%)
096	1,654 acres (77%)	458 acres (21%)	43 acres (2%)
097	1,562 acres (82%)	315 acres (16%)	38 acres (2%)
098	-	625 acres (30%)	1,459 acres (70%)
099	848 acres (35%)	54 acres (2%)	1,474 acres (62%)
100	-	-	2,515 acres (100%)
101	-	-	2,098 acres (100%)
102	101 acres (4%)	-	2,247 acres (95%)

Visual Resource Inventory Classes

The BLM conducted a VRI throughout the BLM Price Field Office in 2011, after the RMP was already completed. This inventory categorizes visual resources into VRI classes, which are based on scenic quality evaluations, analysis of sensitivity level, and the delineation of distance zones. The inventory classes, like VRM, range from 1 to 4. Inventory Classes 1 and 2 represent areas with the most value. Inventory classes 3 and 4 represent areas with the least value. VRI Classes 2 and 3 are present in the proposed lease parcel area. Table 3-16 shows the acreage of the proposed lease parcel area and their associated VRI class. Table 3-17 shows the acreage of the each proposed lease parcel and their associated VRI class. While the current VRM prescriptions from the Price Field Office RMP/ROD were designated prior to the 2011 VRI and have not been amended, the 2011 VRI results can still inform decision making regarding impacts to a known resource.

Table 3-16: Visual Resource Inventory Classes within Lease Parcel Area

VRI Class	Total Acreage within Lease Parcels	Percent of Lease Parcel Area
II	7,080 acres	22%
III	24,927 acres	78%

Table 3-17: Visual Resource Inventory Classes per Parcel

Parcel #	Acreage of VRI Class II within Parcel	Acreage of VRI Class III within Parcel
088	-	2,096 acres (100%)
089	-	2,421 acres (100%)
090	-	2,559 acres (100%)
091	-	2,559 acres (100%)
092	-	1,279 acres (100%)
093	-	1,920 acres (100%)
094	-	2,520 acres (100%)
095	-	1,136 acres (100%)
096	1,421 acres (70%)	727 acres (30%)
097	1,458 acres (76%)	458 acres (24%)

Parcel #	Acreage of VRI Class II within Parcel	Acreage of VRI Class III within Parcel
098	-	2,086 acres (100%)
099	2,066 acres (86%)	324 acres (14%)
100	314 acres (12%)	2,202 acres (88%)
101	1,238 acres (59%)	860 acres (41%)
102	581 acres (25%)	1,778 acres (75%)

3.3.9 Wildlife – BLM Sensitive Species

BLM manages sensitive species in accordance with BLM Manual 6840 with the objective to initiate proactive conservation measures that reduce or eliminate threats to these species to minimize the likelihood of and need for listing of these species under the Endangered Species Act (ESA). Based on the Utah BLM Sensitive Fish and Wildlife Species List – December 20, 2010, there are 57 BLM Utah sensitive species, including 12 species under conservation agreement and 4 candidate species. Each species was evaluated for potential to occur within the lease parcels and potential impacts. All available data sources, including GIS files, field office files, and the Utah Wildlife Action Plan [UDWR 2015] were used to determine if the parcels fall within known habitat for BLM Sensitive Species, refer to the wildlife and botany report for further details. After site-specific review, it has been determined that the BLM Sensitive Species listed in Table 3-18, "Wildlife: BLM Sensitive Species and their Associated Habitats" may occur within the project area or be affected by the Proposed Action.

Table 3-18: Wildlife: BLM Sensitive Species and Their Associated Habitats

Species	Status	Habitat Type	Associated Parcels
MAMMALS			
Big free-tailed bat, Fringed myotis, Spotted bat, Townsend's big-eared bat	BLM Sensitive Species	These species potentially occur throughout Utah.	All Parcels
White-tailed Prairie Dog	BLM Sensitive Species Utah State Sensitive Species	White-tailed prairie dogs require deep, well-drained soils for development of burrows. A majority the white-tailed prairie dog habitat occurs in semi-arid to arid areas with mixed stands of shrubs and grasses.	All Parcels
Kit Fox	BLM Sensitive Species	Kit foxes live primarily in open desert, shrubby or shrub-grass habitat;	All Parcels

		shadscale, greasewood or sagebrush.	

Bats

Several bat species could occur within the lease parcels, big free-tailed bat , fringed myotis, spotted bat, and Townsend's big-eared bat are the most likely to occur. Bats are found in various habitats from grasslands, desert to montane coniferous stands, including pinyon juniper woodland, canyon bottoms, open pasture, and hayfields. They roost in caves, in cracks, and crevices in cliffs and canyons. They are insectivorous. These species are managed under the Bat Conservation Plan. There are many threats to the species including human disturbance of roost sites, especially maternity colonies, through recreational caving and mine exploration, white nose syndrome, collection of specimens by humans and the use of pesticides that the bats may accumulate through their diet and that kill their prey.

Kit fox

Kit foxes live primarily in open desert, shrubby or shrub-grass habitat; shadscale, greasewood or sagebrush. The primary food item is usually the most abundant nocturnal rodent or lagomorph in the area. Kit foxes may also feed opportunistically on birds, reptiles, and insects. Several dens may be used, especially in summer. The 2014 habitat model for Kit fox indicates a high probability of kit fox occurrence within the parcels identified for leasing.

White-tailed Prairie Dog

White-tailed prairie dog are listed as a sensitive species within the State of Utah and by BLM and are currently undergoing a 12-month Endangered Species Act (ESA) review/finding with the USFWS [USFWS 2016]. White-tailed prairie dogs are a rodent species that inhabit regions of eastern Utah and portions of Wyoming, Colorado, and Montana. In Utah, the white-tailed prairie dog can be found at approximately 1280-2438 m in elevation. They form colonies that are typically a few acres, but can range up to several hundred acres [Messmer et al. 1993]. White-tailed prairie dog often colonize in irregular patterns over the landscape [Lupis et al. 2007]. This irregular mosaic pattern of distribution makes accurate mapping of colony boundaries difficult, thus, accurate occupied habitat is hard to estimate, rather, suitable habitat is mapped using topographic features, substrate variation or the best estimate of the investigator [Seglund et al. 2004]. In Utah, white-tailed prairie dog colonies provide habitat for many other vertebrate species, such as burrowing owl and serve as a food source for multiple predators, such as ferruginous hawk, golden eagle and coyote. Several of the limiting factors that were identified for white-tailed prairie dog populations in Utah are disease (i.e. sylvatic plague), changing plant communities and drought (i.e. cheatgrass), and human disturbance (i.e. oil and gas development, agricultural conversion and recreational shooting) [Seglund et al. 2004].

CHAPTER 4 – ENVIRONMENTAL IMPACTS

4.1 INTRODUCTION

This chapter discusses the environmental consequences of implementing the alternatives described in Chapter 2. Under NEPA, actions with the potential to affect the quality of the human environment must be disclosed and analyzed in terms of direct and indirect impacts—whether beneficial or adverse and short or long term—as well as cumulative impacts. Direct impacts are caused by an action and occur at the same time and place as the action. Indirect impacts are caused by an action but occur later or farther away from the resource. Beneficial effects are those that involve a positive change in the condition or appearance of a resource or a change that moves the resource toward a desired condition. Adverse effects involve a change that moves the resource away from a desired condition or detracts from its appearance or condition. Cumulative impacts are the effects on the environment that result from the incremental effect of the action when added to other past, present, and reasonably foreseeable future actions.

No Action Alternative

The No Action Alternative is used as the baseline for comparison with the Proposed Action. Under the No Action Alternative, the 15 parcels totaling 32,013 acres would not be leased. There would be no subsequent environmental impacts from oil and/or gas construction, drilling, and production activities. The no action alternative would result in the continuation of the current land and resource uses in the proposed lease areas.

The BLM assumes that the No Action Alternative (no lease option) may result in a slight reduction in domestic production of oil and gas. This reduction would diminish federal and state royalty income, and increase the potential for federal lands to be drained by wells on adjacent private or state lands. The public's demand for oil and gas is not expected to change; oil and gas consumption is driven by a variety of complex interacting factors including energy costs, energy efficiency, availability of other energy sources, economics, demographics, and weather or climate. If the parcels are not leased, energy demand would continue to be met by other sources such as imported fuel, alternative energy sources (e.g., wind, solar), and other domestic fuel production. This displacement of supply could offset any reductions in emissions and disturbance achieved by not leasing the subject tracts in the short term.

4.2 DIRECT AND INDIRECT IMPACTS

4.2.1 Air Quality

4.2.1.1 Impacts of No Action Alternative

The No Action Alternative would result in no impact to the air quality because the parcels would not be leased or developed.

4.2.1.2 Impacts of Proposed Action Alternative

Existing Sources of Air Pollution

The primary pollutants of concern for Emery County include regional ozone and particulate matter. Regional ozone is common in the western states as forest fires, transport from shipping lanes, electric power generation and other sources contribute to ozone formation from precursor emissions. Particulate matter from fugitive dust is common due to dust storms or vehicle activity on unpaved roads or trails.

Table 4-1 Utah Division of Air Quality – 2016 Annual Report Triennial Inventory (tons/year)[2]

County	CO	NO_x	PM10	PM2.5	SO_x	VOC
Emery	17,837.01	20,402.80	5,146.42	1,249.87	6,427.09	36,041.18

The act of leasing will not result in changes to air quality. However, should the leases be issued, development of those leases could impact air quality conditions. It is not possible to accurately estimate potential air quality impacts from leasing due to the variation in emission control technologies as well as construction, drilling, and production techniques utilized by various operators in the region, so the discussion of air quality impacts is primarily qualitative for the purposes of this document.

Prior to authorizing proposed projects on the subject lease parcels, air quality modeling using project-specific emissions and planned development parameters (including specific emission source locations) may be required to adequately analyze direct and indirect air quality impacts. In conducting a subsequent project-specific analysis, the BLM will follow the policy and procedures of the National Interagency MOU Regarding Air Quality Analysis and Mitigation for Federal Oil and Gas Decisions through NEPA, and the FLAG 2010 air quality guidance document. Air quality dispersion modeling which may be required includes impact analysis for demonstrating compliance with the NAAQS, plus an analysis of impacts to Air Quality Related Values (i.e. deposition, visibility) in Class 1 areas (national parks and wilderness areas).

All of the parcels offered are within areas that are in attainment with the NAAQS. Different emission sources would result from the two site-specific lease development phases: well development and well production. The BLM may require mitigation measures for pollutants via lease stipulations and further NEPA actions throughout the lease process.

Well development includes emissions from earth-moving equipment, vehicle traffic, drilling, and completion activities. NO_X, SO_2, and CO would be emitted from vehicle tailpipes. Fugitive dust concentrations would increase with additional vehicle traffic on unpaved roads and from wind erosion in areas of soil disturbance. Drill rig and fracturing engine operations would result mainly in NO_X and CO emissions, with lesser amounts of SO_2. These temporary emissions would be short-term during the drilling and completion times.

The construction, drilling, completion, testing, and production of an oil and gas well could result in various emissions that affect air quality. Construction activities result in emissions of particulate matter. Well drilling activities result in engine exhaust emissions of NOx, CO, and

[2] https://documents.deq.utah.gov/air-quality/annual-reports/DAQ-2017-001541.pdf

VOC. Completion and testing of the well result in emissions of VOC, NO_X, and CO. Ongoing production results in the emission of NOx, CO, VOC, and particulate matter.

During well production there may be continuous emissions from separators, condensate storage tanks, dehydrators and daily tailpipe and fugitive dust emissions from operations traffic. During the operational phase, NO_X, CO, VOC, and HAP emissions would result from the long-term operation of these sources. Additionally, road dust (PM_{10} and $PM_{2.5}$) would be produced by vehicles servicing the wells.

Due to the very small level of anticipated development, an emissions inventory (EI) has not been developed for this lease sale. Table 4-2 presents a typical oil and gas well EI is estimated for the purpose of this analysis and is based on the following assumptions:

- Each oil and gas well would cause approximately 12 acres of surface disturbance. This acreage includes access.
- Construction activity for each well is assumed to be 10 days. It is further assumed that, based on the acreage disturbed, 4.5 days would be spent in well pad construction and 5.5 days would be spent in road and pipeline construction.
- Control efficiency of 25% for dust suppression would be achieved as a result of compliance with Utah Air Quality regulation R307-205.
- Post construction particulate matter (dust) emissions are likely to occur on a short term basis due to loss of vegetation within the construction and staging areas. Assuming appropriate interim reclamation, these emissions are likely to be minimal to negligible and will not be considered in this EA.
- Drilling operations would require 20-60 days.
- Completions and testing operations would require 3 days.
- Off road mobile exhaust emissions from heavy equipment during construction activities and on road mobile emissions would not be considered as they are dispersed, sporadic, temporary, and not likely to cause or contribute to exceedance of the NAAQS.

If exploration occurs, short-term impacts would be stabilized or managed rapidly (within two to five years), and long-term impacts are those that would substantially remain for more than five years. An air quality best management practice (BMP) which discusses the amounts of NO_X emission per horse-power hour based on internal combustion engine size, would be attached to all parcels. Stipulation UT-S-01, Air Quality, consists of the following provisions:

- All new and replacement internal combustion gas field engines of less than or equal to 300 design-rated horsepower must not emit more than 2 grams of NOx per horsepower-hour. This requirement does not apply to gas field engines of less than or equal to 40 design-rated horsepower.

- All new and replacement internal combustion gas field engines of greater than 300 design rated horsepower must not emit more than 1.0 gram of NOx per horsepower-hour.

Emission factors for activities of the proposed action were based on information contained in the EPA's Emission Factors & AP 42, Volume I, Fifth Edition [EPA 1995], available at: https://www.epa.gov/air-emissions-factors-and-quantification/ap-42-compilation-air-emission-factors.

Production emissions from oil storage tanks were estimated based on the emission factor contained in the Colorado Department of Public Health and Environment PS Memo 05-01, Oil & Gas Atmospheric Condensate Storage Tank Batteries Regulatory Definitions and Permitting Guidance [CDPHE 2017], available at: https://www.colorado.gov/pacific/sites/default/files/AP_Memo-05-01-Oil-and-Gas-Condensate-Tank-Batteries-Guidance.pdf .

Table 4-2 Emissions Estimate For a Typical Well

	Construction Emissions (Tons)	Drilling Emissions (Tons)			Completions Emissions (Tons)				Ongoing Production Emissions (Tons/Year)			
	PM_{10}	NO_X	CO	VOC	VOC	NO_X	CO	PM_{10}	NO_X	CO	VOC	PM_{10}
Typical Well	0.34	13.31	1.83	0.23	0.85	0.07	0.07	0.00	0.01	0.01	6.44	0.000
					PM_{10}	NO_X	CO	VOC				
Activity Emissions (Tons) (Total emissions for well drilling and completion)					0.34	13.38	1.90	1.08				
Production Emissions (Tons/Year) (Ongoing annual emissions for the well)					0.000	0.01	0.01	6.44				

Based on the emissions estimates contained in Table 4-2, and considering the location of the proposed leasing relative to population centers and Class 1 Areas, substantial air resource impacts are not anticipated as a result of this leasing action. No further analysis or modeling is required until development is proposed.

Additional air quality control measures may be warranted and imposed at the APD stage. These control measures are dependent on future regional modeling studies or other analysis or changes in regulatory standards. As such, a lease notice would be appropriate to inform an operator or the general public that additional air quality control measures would be pursued. Lease notices UT-LN-99 (Regional Ozone Formation Controls) and UT-LN-102 (Air Quality Analysis) will be attached to all lease parcels.

To address impacts that oil and gas development emissions may have on regional ozone formation, the following Best Management Practices (BMPs) will be required through a lease

notice (UT-LN-99, Regional Ozone Formation Controls) for any development projects related to this lease sale:

- Tier II or better drilling rig engines
- Stationary internal combustion engine standard of 2g NOx/bhp-hr for engines <300HP and 1g NOx/bhp-hr for engines >300HP
- Low-bleed or no-bleed pneumatic pump valves
- Dehydrator VOC emission controls to +95% efficiency
- Tank VOC emission controls to +95% efficiency

4.2.2 Areas of Critical Environmental Concern

4.2.2.1 Impacts of No Action Alternative

The No Action Alternative would result in no impact to the relevant and important values of the designated ACECs within the proposed lease parcels because the parcels would not be leased or developed.

4.2.2.2 Impacts of Proposed Action Alternative

The issuance of leases would not directly impact the ACEC's relevance and importance values. However, as the BLM generally cannot deny all surface use of a lease unless the lease is issued with a No Surface Occupancy stipulation, the issuance of leases does convey an expectation that drilling and development would occur. No Surface Occupancy stipulation UT-S-10 would be applied to each parcel within the Rock Art ACEC sites in order to mitigate the impacts of oil and gas development on ACEC cultural resource values.

The potential for future oil and gas development would have a potential impact on the relevant and important cultural resource values of the three Rock Art ACEC sites located within the proposed lease parcels. However, the No Surface Occupancy stipulation applied to these ACEC sites would reduce and minimize potential impacts to cultural values within the ACEC on parcels 089, 090, 091, 093, 094, 095, 100, and 101. For additional information on any potential impacts to the relevant and important cultural resources, see Section 4.2.3.2.

Potential impacts to the Rock Art ACEC sites will vary within the parcels, and would be dependent on the siting of any oil and gas development infrastructure at the APD phase. If the proposed parcels are leased, a site-specific exploration or development plan will be required. Future oil and gas exploration operations will be addressed and analyzed in a site-specific NEPA document, which will mitigate impacts to identified resources resulting from a site-specific and defined operational plan.

4.2.3 Cultural Resources

The National Historic Preservation Act and its associated regulations found at 36CFR800 require federal agencies to consider the impacts of undertakings on historic properties. Historic properties are defined as cultural resources which are eligible or potentially eligible for listing on the National Register of Historic Places (NRHP). Cultural resources must meet one of four eligibility criteria and maintain integrity in order to be considered for listing on the NRHP.

The Criteria for Adverse Effect found at 36CFR800.5(a)(1) are used in this section to analyze the potential effects to historic properties. This regulation states: "An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association."

Oil and gas development resulting from leasing within the proposed area has the potential to impact historic properties. Adverse impacts that may result from oil and gas development include: physical damage or destruction of the property; changes in the physical setting of the historic property that contribute to the properties significance; and introduction of visual, atmospheric, or audible elements that diminish the property's significant historic features. Consideration of impacts to cultural resources must be taken into account during the development and approval stages of site specific development plans.

4.2.3.1 Impacts of No Action Alternative

The No Action Alternative would not affect cultural resources within the parcels proposed for lease because the proposed lease parcels would not be offered at the December 2017 oil and gas lease sale.

4.2.3.2 Impacts of Proposed Action Alternative

Cultural resource stipulations are applied to all parcels offered for leasing (UT-S-169). Areas within the Rock Art ACECs are subject to a NSO lease stipulation (UT-S-10).

Based on the assessment of expected site density and location, anticipated size of development, and topographic complexity of the proposed lease parcels, BLM determines that reasonable development of 7.9 acres of disturbance associated with a single well pad could occur within the parcels with no adverse effect to historic properties. Effects to historic properties from a single well pad can be avoided through the judicious placement of that well within the lease areas. Similarly, the topographic complexity of the parcels will allow for the avoidance of indirect and/or cumulative effects through the judicious placement of disturbances. Any development must take into account the eligible sites within the parcels; through judicious placement of planned development, these locations can be avoided and development will have no adverse effect to the sites. The BLM therefore makes a determination of **No Adverse Effect t**o Historic Properties consistent with 36 CRF 800.5(b) for the PFO December 2017 Oil and Gas Lease Sale.

While the BLM has determined historic properties within the above parcels will not be adversely affected by this lease sale, the issuance of the lease does convey an expectation that ground disturbance may occur, and this constitutes a future undertaking. The BLM will not approve any ground disturbing activities until it completes its obligations under the NHPA and other authorities for this future undertaking. Partially to this end, all parcels will be leased with the BLM's standard *Cultural Resources Stipulation*, as well as *Controlled Surface Use- Cultural Resource Inventories* stipulation (UT-S-169). Lease stipulations are additional legal requirements that go above and beyond standard lease requirements. Meeting lease stipulation

requirements is a critical component of having any future proposed development approved by the BLM. The *Cultural Resource Stipulation* states that compliance with cultural resource preservation laws is a requirement prior to approval of any ground disturbance, and the BLM may require modification to proposals or not approve any activity to protect these resources if conflicts cannot be addressed to the BLM's satisfaction. While NHPA compliance is the BLM's obligation regardless, this stipulation serves as a strong reminder to lessees and provides additional authority for cultural resource considerations at the development phase. The *Cultural Resources Inventories* stipulation requires cultural resources inventories for all federal undertakings that could affect cultural resources or historic properties.

4.2.4 Greenhouse Gas Emissions/Climate Change

4.2.4.1 Impacts of No Action Alternative

The No Action Alternative would result in no GHG emissions and no impacts to climate change from the proposed lease parcels because they would not be offered at the December 2017 oil and gas lease sale.

4.2.4.2 Impacts of Proposed Action Alternative

As explained in Section 3.3.4, the effects of climate change observed to date and projected to occur in the future include more frequent and intense heat waves, longer fire seasons and more severe wildfires, degraded air quality, more heavy downpours and flooding, increased drought, greater sea-level rise, more intense storms, harm to water resources, harm to agriculture, ocean acidification, and harm to wildlife and ecosystems.

There would be no GHG emissions as a direct result of the Proposed Action, which is administrative in nature – i.e., issuance of leases for Federal mineral resources. Nevertheless, the BLM recognizes that GHG emissions are a potential effect of the subsequent fluid mineral exploration and/or development of any leases that are issued. Oil and gas activities may lead to the installation and production of new wells, which may consequently produce an increase in GHG emissions. The primary sources of GHG emissions include the following:

- Fossil fuel combustion for construction and operation of oil and gas facilities – vehicles driving to and from production sites, engines that drive drill rigs, etc. These produce CO_2 in quantities that vary depending on the age, types, and conditions of the equipment as well as the targeted formation, locations of wells with respect to processing facilities and pipelines, and other site-specific factors;
- Fugitive CH_4 – CH_4 that escapes from wells (both gas and oil), oil storage, and various types of processing equipment. This is a major source of global CH_4 emissions. These emissions have been estimated for various aspects of the energy sector, and starting in 2011, producers are required under 40 CFR 98, to estimate and report their CH_4 emissions to the EPA; and
- Combustion of produced oil and gas – it is expected that future operations would produce marketable quantities of oil and/or gas. Combustion of the oil and/or gas would release CO_2 into the atmosphere. Fossil fuel combustion is the largest source of global CO_2.

In recent years, many states, tribes, and other organizations have initiated GHG inventories, tallying GHG emissions by economic sector. The U.S. EPA provides links to statewide GHG emissions inventories [EPA 2015]. Guidelines for estimating project-specific GHG emissions are available, but some additional data, including the projected volume of oil or natural gas produced for an average well, number of wells (as well as other factors described in Section 4.2.1 Air Quality) were used to provide GHG estimates.

Rule of Reason

Agencies should be guided by a "rule of reason" in ensuring that the level of effort expended in analyzing GHG emissions or climate change effects is reasonably proportionate to the importance of climate change related considerations to the agency action being evaluated. This statement is grounded in the purpose of NEPA to concentrate on matters that that are truly significant to the Proposed Action (40 CFR §§ 1500.4(b), 1500.4(g), 1501.7.). In light of the difficulties in attributing specific climate impacts to individual projects, it is recommended agencies use the projected GHG emissions as a proxy for assessing a Proposed Action's potential climate change contribution.

Indirect Greenhouse Gas Emissions

Indirect greenhouse gas emissions from speculative future oil and gas well production on the proposed lease parcels was calculated assuming one well per parcel. Total Greenhouse Gas Warming Potential (GWP), which includes direct emissions of carbon dioxide, methane, and nitrous oxide from an oil or gas producing well is estimated based on using a generic emissions calculator which estimated emissions of 1,192 tons per year CO2e for a single operational well, and 2,305 tons per year CO2e for a single drill rig.

Downstream Greenhouse Gas Emissions

Indirect GHG emissions are estimated based on an average cumulative production rate of 268,050 MCF gas over the life of a well, based on the production history for the townships in which the parcels are located. [UDOGM 2016] Indirect GHG emissions are also only calculated for carbon dioxide based on combustion of the product.

Using an RFD of one well drilled per parcel, and an EPA emissions factor of 0 0.054717, MT of CO_2 per Mcf of gas [EPA 2016a] indirect GHG emissions can be estimated at 220,004 metric tons per parcel. Actual GHG emissions may range from zero (assuming no lease parcels sold or developed) to an indeterminate upper range based on realized production rates, control technology, and physical characteristics of any gas produced.

As it is not possible to assign a "significance" value or impact to these numbers, the emissions estimates themselves are presented for disclosure purposes.

Uncertainties of GHG Calculations

Although this EA presents a quantified estimate of potential GHG emissions associated with reasonably foreseeable oil and gas development, there is significant uncertainty in GHG

emission estimates due to uncertainties with regard to eventual production volumes and variability in flaring, construction, and transportation.

End Uses

The estimates above provide a complete GHG lifecycle of a well from site inspection to possible indirect emissions through combustion. A rough estimate was possible using publicly available information and using estimates from future production for reasonably foreseeable development. With respect to the rough estimates of indirect CO_2 emissions, it should be noted that it is a difficult to discern with certainty what end uses for the fuels extracted from a particular leasehold might be reasonably foreseeable. For instance, some end uses of fossil fuels extracted from Federal leases include: combustion of transportation fuels, fuel oils for heating and electricity generation, as well as production of asphalt and road oil, and the feedstocks used to make chemicals, plastics, and synthetic materials. At this time, there is some uncertainty with regard to the actual development that may occur.

It is important to note that the BLM does not exercise control over the specific end use of the oil and gas produced from any individual federal lease. The BLM has no authority to direct or regulate the end use of the produced oil and/or gas. As a result, the BLM can only provide an estimate of potential GHG emissions using national approximations of where or how the end use may occur because oil, condensate, and natural gas could be used for combustion of transportation fuels, fuel oils for heating and electricity generation, as well as production of asphalt and road oil, and the feedstocks used to make chemicals, plastics, and synthetic materials.

Availability of Input Data

In light of the difficulties in attributing specific climate impacts to individual projects, it is recommended agencies use the projected GHG emissions as a proxy for assessing a Proposed Action's potential climate change impacts. Estimates were made based on readily available data and reasonable assumptions about potential future development. There are many factors that affect the potential for GHG emissions estimates at the leasing stage: a lease may not be purchased, so no GHG emissions would be expected; a lease may be purchased but never explored, so again there would be no GHG emissions; a lease may be purchased and an exploratory well drilled that showed no development potential, so minimal GHG emissions would occur; or a lease may be purchased, explored, and developed. If developed there are notable differences in the potential for emissions related to a wide variety of variables, including the production potential of the well, economic considerations, regulatory considerations, and operator dynamics, to name a few. Further NEPA analysis would be conducted at the APD stage, when specific development details with which to analyze potential GHG emissions are likely to be known.

Monetizing Costs and Benefits: Social Cost of Greenhouse Gases

Current BLM guidance states that "NEPA does not require monetizing costs and benefits" and allows for agency discretion in including monetized assessment of the impacts of GHGs in NEPA documents. The BLM finds that including monetary estimates of the social cost of GHGs (SC GHG) in its NEPA analysis for this Proposed Action would not be useful. Because the

BLM is not doing a cost-benefit analysis in this NEPA document, we do not believe monetizing only SCC GHG would be instructive.

Possible Future Best Management Practices, Standard Operating Procedures, and/or Mitigation Measures

The BLM holds regulatory jurisdiction over portions of natural gas and petroleum systems, identified in the EPA *Inventory of U.S. Greenhouse Gas Emissions and Sinks* [EPA 2016b]. Exercise of this regulatory jurisdiction has led to development of Best Management Practices (BMPs), which are state-of-the-art mitigation measures applied to oil and natural gas drilling and production to help ensure that energy development is conducted in an environmentally responsible manner. The BLM encourages industry to incorporate and implement BMPs to reduce impacts to air quality through reduction of emissions, surface disturbances, and dust from field production and operations. Typical measures are mentioned below:

- Open burning of garbage or refuse would not occur at well sites or other facilities;
- Drill rigs would be equipped with Tier II or better diesel engines;
- Vent emissions from stock tanks and natural gas TEG dehydrators would be controlled by routing the emissions to a flare or similar control device which would reduce emissions by 95% or greater;
- All internal combustion equipment would be kept in good working order;
- Flared hydrocarbon gases at high temperatures in order to reduce emissions of incomplete combustion through the use of multi-chamber combustors;
- Watering dirt roads during periods of high use to reduce fugitive dust emissions;
- Co-location wells and production facilities to reduce new surface disturbances;
- Use of natural gas fired or electric drill rig engines;
- The use of selective catalytic reducers and low-sulfur fuel for diesel-fired drill rig engines;
- Adherence to BLM's Notice to Lessees' (NTL) 4a concerning the venting and flaring of gas on Federal leases for natural gas emissions that cannot be economically recovered;
- Protecting hydraulic fracturing sand from wind erosion;
- Implementation of directional drilling and horizontal completion technologies whereby one well provides access to petroleum resources that would normally require the drilling of several vertical wellbores;
- Requiring that vapor recovery systems be maintained and functional in areas where petroleum liquids are stored; and
- Performing interim reclamation to reclaim areas of the pad not required for production facilities and to reduce the amount of dust from the pads.

Additionally, the BLM encourages oil and natural gas companies to adopt proven, cost-effective technologies and practices that improve operational efficiency and reduce natural gas emissions. In October 2012, EPA promulgated air quality regulations for completion of hydraulically fractured gas wells [EPA 2015]. These rules required air pollution mitigation measures that reduced the emissions of volatile organic compounds during gas well completions. Mitigation

included utilizing a process known as a "green" completion in which natural gas brought up during flowback is captured in tanks rather than in open fluid pits. Among other measures to reduce emissions include the EPA's Natural Gas STAR program. The EPA U.S. inventory data shows that industry's implementation of BMPs proposed by the program has reduced emissions from oil and gas exploration and development [EPA 2017b].

4.2.5 Lands with Wilderness Characteristics

4.2.5.1 Impacts of No Action Alternative

The No Action Alternative would not affect lands with wilderness characteristics within the parcels proposed for lease because the proposed lease parcels would not be leased or developed.

4.2.5.2 Impacts of Proposed Action Alternative

Although the issuance of the leases would not directly impact the wilderness characteristics (size, naturalness, and outstanding opportunities for solitude and/or primitive, unconfined recreation) of the area, the issuance of leases does convey an expectation that drilling and development would occur. The potential development of the lease would likely cause indirect impacts to wilderness characteristics. A number of variables would influence the degree of impact to lands with wilderness characteristics, including the actual location on which surface-disturbing activities occur, land form or topography, vegetation type, sequence of development, and reclamation time. If drilling and development were to occur in lands with wilderness characteristics, the wilderness characteristics in that area would likely be reduced. Impacts could include loss of naturalness and loss of opportunities for solitude or primitive unconfined recreation. Additional impacts from development could include a reduction in the size of the unit. Development associated with oil and gas leasing (e.g., well pads, access roads) could bisect or fragment a portion of the wilderness characteristics unit so that all or part of the unit no longer meets the size criteria.

Potential impacts to wilderness characteristics as a result of oil and gas development were anticipated in the Price FEIS and Proposed RMP, which states, "Construction and operation of oil and gas wells and associated support facilities, including roads, surface and buried pipelines, powerlines, compressor stations, and other permanent structures, would create soil and vegetation disturbance and visual intrusions. The affected portions of non-WSA lands with wilderness characteristics would no longer appear natural. In addition to site-specific surface disturbance, the cumulative number of wells and density of spacing would change the natural appearance of the landscape to an industrial landscape. The noise of construction and operation of producing wells, including the presence of work crews, vehicles, and equipment, would degrade the quality of opportunities for solitude and primitive and unconfined recreation in proximity to industrial development. The sights and sounds of development would diminish with distance from the intrusions and activies; however, it is expected that sights and sounds from development would reduce the quality of opportunities for solitude and primitive and unconfined recreation up to a half-mile beyond the direct loss of natural appearance. Given the number and spacing of industrial facilities, the quality of opportunities for solitude and primitive recreation could be degraded throughout the areas with wilderness characteristics" (Page 4-190).

The RMP made the decision not to preserve and protect the wilderness characteristics of the Eagle Canyon lands with wilderness characteristics unit and the Sids Mountain lands with wilderness characteristics unit. However, as guided by Instruction Memorandum (IM) UT-2016-027 – *BLM-Utah Lands with Wilderness Characteristics Guidance* [BLM 2016], the BLM must document and analyze impacts to lands with wilderness characteristics even when a decision to select an alternative that impairs wilderness characteristics conforms to the RMP.

With 94% of the proposed lease parcels existing within an area known to have wilderness characteristics, development scenarios outside of lands with wilderness characteristics will be limited. More specifically, parcels 089, 091, 092, 093, 094, 095, 096, and 098 all have potential, but limited, development scenarios outside of lands with wilderness characteristics. Table 4-3 shows the total potential disturbance to lands with wilderness characteristics under the Proposed Action with the assumption that one well pad (and all associated infrastructure) would be developed per parcel with a total disturbance of 7.9 acres per well pad.

Table 4-3: Potential Disturbance to Lands with Wilderness Characteristics

Lands with wilderness characteristics Unit	Total Acreage of lands with wilderness characteristics Unit	Potential Disturbance within lands with wilderness characteristics Unit	Percent of Potential Disturbance to lands with wilderness characteristics Unit
Eagle Canyon	38,662 acres	110.6 acres	<1%
Sids Mountain	4,060 acres	23.7 acres	<1%

Under the Proposed Action, the Eagle Canyon lands with wilderness characteristics unit could experience oil and gas development in all nominated lease parcels except for parcel 096. If well pads and other associated infrastructure are developed in an area known to have wilderness characteristics, the following would occur:

- The size requirement of 5,000 acres of roadless BLM-administered surface would not be impacted because the Eagle Canyon lands with wilderness characteristics unit would likely continue to contain more than 38,000 roadless acres, even after the potential development under the Proposed Action.
- The development of up to 110.6 acres of the Eagle Canyon lands with wilderness characteristics unit could impact the apparent naturalness of the lands with wilderness characteristics unit. Naturalness, as defined by BLM Manual 6310 – *Conducting Wilderness Characteristics Inventory on BLM Lands* [BLM 2012], is an area that must appear to have been affected primarily by the forces of nature, and any work of human beings must be substantially unnoticeable. It is expected that the naturalness of the lands with wilderness characteristics unit will be lost at the each of the potential 14 well pads and along any of the associated access roads. Acreage within the unit that is not directly affected by drilling activity and road construction will retain its naturalness. Additionally, topography and vegetative screening can mitigate the visual and auditory impacts from drilling activity.

- Additionally, the development of up to 110.6 acres of the Eagle Canyon lands with wilderness characteristics unit could impact the outstanding opportunities for solitude. As described in BLM Manual 6310, visitors must have an outstanding opportunity to avoid the sights, sounds, and evidence of other people in the area. Although the topography of the proposed lease parcels might allow for development in locations that mitigate impacts to outstanding opportunities for solitude, impacts might not be fully avoided.
- The Proposed Action and its associated 110.6 acres of potential disturbance could also impact outstanding opportunities for primitive and unconfined recreation in and near developed areas, particularly by interspersing industrial traffic into the area. Primitive and unconfined recreation is defined by BLM Manual 6130 as activities that provide dispersed, undeveloped recreation which do not require facilities, motor vehicles, motorized equipment, or mechanized transport.

Under the Proposed Action, the Sids Mountain lands with wilderness characteristics unit could experience oil and gas development within nominated lease parcels 096, 097, and 099. If well pads and other associated infrastructure is developed in an area known to have wilderness characteristics the following would occur:

- The size requirement of 5,000 acres would not be impacted because the Sids Mountain lands with wilderness characteristics unit is contiguous with the Sids Mountain WSA. Lands with wilderness characteristics can be less than 5,000 acres if they are contiguous with lands which have been formally determined to have wilderness or potential wilderness values, or any Federal lands managed for the protection of wilderness characteristics.
- The impacts to apparent naturalness, outstanding opportunities for solitude and/or primitive and unconfined recreation would generally be the same as those described above for the Eagle Canyon lands with wilderness characteristics unit, except they would occur on 23.7 acres of potential disturbance.

4.2.6 Recreation

4.2.6.1 Impacts of No Action Alternative

The No Action Alternative would not affect recreation resources within the parcels proposed for lease because the proposed lease parcels would not be leased or developed.

4.2.6.2 Impacts of Proposed Action Alternative

All of the proposed lease parcels are entirely within the San Rafael Swell SRMA. With the potential of up to 118.5 acres of disturbance, less than 1% of the surface of the San Rafael Swell SRMA could be impacted. The RMP states that this SRMA is to be managed to provide outstanding recreation opportunities and visitor experiences while also protecting natural and cultural resource values. There are no specific stipulations provided for in the RMP to guide

location or construction of well pads for oil and gas development; thus, the SRMA could potentially be impacted by any future lease development.

As directed by the RMP, the San Rafael Swell SRMA is to be managed by the ROS. 24% of the proposed lease parcels are within a ROS class of Semi-Primitive Non-Motorized. These areas should have little to no evidence of motorized routes and structures should be rare and isolated. However, if oil and gas development does occur within an area classified as Semi-Primitive Non-Motorized, opportunities for semi-primitive recreation would decrease because of the presence of mineral extraction facilities. Increased traffic from mineral development personnel would add to conflicts with recreational uses of these areas. The quality of the recreation experience would be degraded because of intrusions and loss of scenic quality [BLM 2008b, p. 270]. Additionally, development in these areas could displace recreation users to other, less developed areas, or eliminate some recreation opportunities.

75% of the proposed lease parcels exist in a ROS class of Semi-Primitive Motorized. These are areas where roads and structures could be permissible. Additionally, there is a portion of parcel 095 with a ROS class of Roaded Natural where development of both roads and structures would be appropriate. For the Semi-Primitive Motorized and Roaded Natural ROS classifications within the nominated lease parcels, motorized and mechanized forms of recreation activities would be most compatible with the level of development in these areas.

Additionally, 17% of the proposed lease parcels exist within the Head of Sinbad/Swaseys Cabin/Sids Mountain RMZ, which is part of the San Rafael Swell SRMA. With the potential of up to 31.6 acres of disturbance, less than 1% of the RMZ could be impacted. The RMZ, like the SRMA, is to be managed to provide outstanding recreation opportunities and visitor experiences in a way that protects the natural and cultural resource values, but is identified as an area that is more easily accessible than the more remote portions of the San Rafael Swell SRMA.

4.2.7 Plants – BLM Sensitive Species

4.2.7.1 Impacts of No Action Alternative

The No Action Alternative would prevent future potential impacts to Sensitive plants relating to the lease development proposed in the action alternative because the parcels would not be leased or developed.

4.2.7.2 Impacts of Proposed Action Alternative

The issuance of leases would not directly impact Sensitive plant species on the parcels. However, as the BLM generally cannot deny all surface use of a lease unless the lease is issued as a No Surface Occupancy stipulation, the issuance of leases does convey an expectation that drilling and development would occur. Surface disturbance associated with drill pads, roads and other associated activities could impact habitat for BLM Sensitive plant species.

Chapter 3 identifies two species that could be impacted through future actions on leased parcels. In addition to the potential loss or damage to individuals, these impacts include direct dispersed and indirect impacts including: the loss of suitable habitat for the species and its pollinators; increased competition for space, light, and nutrients with invasive and noxious weed species

introduced and spread due to surface disturbing activities; accidental spray or drift of herbicides used during invasive plant control; altered photosynthesis, respiration, and transpiration due to increased fugitive dust resulting from the surface disturbance and project related traffic.

Application of the lease notice UT-LN-51 Sensitive Plants to each of the identified parcels would be adequate for the leasing stage to disclose potential restrictions against future authorizations. Impacts to the identified species and their respective habitats resulting from future authorizations connected to the proposed leases cannot be analyzed until an exploration or development application is received, individual species surveys are completed, and necessary avoidance and mitigation are incorporated into the plan of development or applied to the application as a condition of approval.

4.2.8 Visual Resources

4.2.8.1 Impacts of No Action Alternative

The No Action Alternative would not affect visual resources within the parcels proposed for lease because the proposed lease parcels would not be leased or developed.

4.2.8.2 Impacts of Proposed Action Alternative

Potential impacts to visual resources as a result of oil and gas development were anticipated in the Price FEIS and Proposed RMP, which states, "The construction of well pads, access roads, pipelines, compressor stations, and other support facilities associated with oil and gas exploration and development would result in modification of the landscape and thus of visual resource values. Construction of these facilities would alter the landform, remove vegetation, and introduce human-made structures to the landscape. On steeper slopes, road and well pad construction would require cutting and filling of soil to produce road beds and well pads; therefore, on steeper slopes, there would be more soil disturbance than on gentler slopes. Vegetation removal and soil disturbance (and subsequent exposure of the underlying soil) associated with building roads and well pads would create lines in and openings on the landscape. This would create contrast in the color, line, and texture of the vegetation community. Depending on the extent of cutting and filling for roads and well pads, there would also be changes to landforms observed (e.g., leveling of angular slopes). The degree of contrast would also be influenced by the vegetation community (i.e., density and type of vegetation), soil type (i.e., color and texture, and observation point of the viewer. Installation of pipelines, compressor stations, and other support facilities would result in vegetation removal, soil disturbance, and placement of human-made structures on the landscape. The size of the facilities would dictate the degree of vegetation removal. The steepness of slope would affect the extent of soil disturbance and landform change. The design and location of facilities would affect their visibility on the land. When pipelines are buried, and the soils and vegetation rehabilitated, the changes to the landscape, and thus its visual appeal, in the long term. The density of development (i.e., well spacing) would affect the overall degree of impact—either small and localized, or apparent on a broader landscape level" [BLM 2008a, p. 4-77, 78].

The potential oil and gas development that would result from leasing the proposed parcels could change the scenic quality, but development should occur in appropriate locations based on the application of the stipulation UT-S-160, which states, "Within VRM II areas, surface disturbing

activities will comply with BLM Manual Handbook 8431-1 to retain the existing character of the landscape."

17% of the proposed lease parcels contain VRM class II and development in these areas would need to meet the management objective of retaining the existing character of the landscape and the level of change to the landscape should be low, as outlined in BLM Manual Handbook 8431-1. 81% of the proposed lease parcels are within VRM class IV, and 6% of the proposed lease parcels are within VRM class III. Oil and gas leasing and the potential development could occur in both VRM Class III and IV, but every attempt should be made to reduce or eliminate impacts to the visual resources by carefully locating well pads and their associated infrastructure and minimizing ground disturbance. Additionally, for all areas with a VRM class III, any change to the characteristics of the landscape should be moderate and should not dominate a casual observer's view. Site-specific analysis will be required before any oil and gas exploration and/or development occurs to ensure that development is in conformance with the VRM Management Class.

22% of the proposed lease parcels are within an area with a VRI class II. Approximately 47.4 acres is the maximum acreage of lands with a VRI class II that could be impacted with the construction and development of a single well pad and the associated infrastructure. The remaining 78% of the proposed lease parcel area is within a VRI class III. Approximately 118.5 acres could be impacted if all oil and gas development for the proposed lease parcels occurred within an area classified as VRI class III. Any future oil and gas exploration and/or development could cause a change to the scenic quality of the area as described above with VRM. Those changes must be analyzed with site-specific analysis before any oil and gas exploration and/or development occurs. Prior to any surface disturbance resulting from oil and gas development, a visual contrast rating form should be completed.

4.2.9 Wildlife – BLM Sensitive Species

4.2.9.1 Impacts of No Action Alternative

The No Action alternative would not result in any potential impacts because the parcels would not be leased, and therefore, not developed.

4.2.9.2 Impacts of Proposed Action Alternative

The issuance of leases would not directly affect BLM Sensitive Species or their associated habitat. However, the issuance of a lease does convey an expectation that oil and gas development could occur. Chapter 3 identifies BLM Sensitive Species and habitats, which could be potentially impacted through future actions on leased parcels. Project-specific impacts relating to future authorizations cannot be analyzed until an application for development is received, however it is assumed to include the direct loss and fragmentation of habitat upon construction of a well pad with its associated road and pipeline. In addition to the direct loss and fragmentation of habitat associated with a future Proposed Action, noise disturbances and increased traffic levels could temporarily displace wildlife species as described in Table 4-4.

Table 4-4: BLM Sensitive Species and Potential Impacts

Species	Potential Impacts	Lease Notice
MAMMALS		
Towsend's big-eared bat, Spotted bat, Allen's big-eared bat, Western red bat, Fringed myotis, Big free-tailed bat	Construction of roads and well pads could result in the loss of foraging habitat, making it less suitable for bats. As traffic volumes and/or project-related activities increase, adjacent habitat may be avoided due to human presence, noise, and the potential influx of invasive weeds. The application of the Lease Notice (UT-LN-49) provides the opportunity to make adjustments including necessary avoidance and mitigation incorporated into the plan of development or applied to the application as a condition of approval when an APD is received to reduce potential effects to the species in the area.	UT-LN-49: Utah Sensitive Species
Kit Fox	Disturbance from potential development of the parcels would displace kit fox from dens or foraging areas, reduce prey species, and loss of habitat may occur. The application of the Lease Notice (UT-LN-49) provides the opportunity to make adjustments at the site specific level when an APD is received to reduce potential effects to the species in the area.	UT-LN-49: Utah Sensitive Species
White-Tailed Prairie dog	Disturbance from potential development of the parcels would displace white-tailed prairie dogs from burrows, foraging areas, reduce prey species, influence predator species, and loss of habitat may occur. The majority of the parcels have marginal quality of white-tailed prairie dog habitat due to unsuitable soils for burrows, thus any discovered colonies could be avoided. The application of the Lease Notice provides the opportunity to make adjustments at the site specific level when an APD is received to reduce potential effects to the species in the area.	UT-LN-25: White-Tailed and Gunnison Prairie Dog and UT-LN-49: Utah Sensitive Species

4.3 CUMULATIVE IMPACTS

4.3.1 Introduction

NEPA requires federal agencies to consider the cumulative effects of proposals under their review. Cumulative effects are defined in the Council on Environmental Quality (CEQ) regulations 40 CFR §1508.7 as "the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency . . . or person undertakes such other actions." The CEQ has stated that the "cumulative effects analyses should be conducted on the scale of human communities, landscapes, watersheds, or airsheds" using the concept of "project impact zone" (i.e., the area that might be influenced by the Proposed Action).

Offering and issuing leases for the subject parcels, in itself, would not result in cumulative impacts to any resource. Nevertheless, future development of the leases could be an indirect effect of leasing. The RMP/EIS provides the BLM's analysis of cumulative effects of oil and gas development based on the reasonably foreseeable oil and gas development scenario. This analysis is hereby incorporated by reference. The cumulative impacts analysis in the RMP/EIS accounted for the potential impacts of development of lease parcels in the planning area as well as past, present and reasonably foreseeable actions known at that time. This analysis expands upon the RMP/EIS analysis by incorporating new information.

4.3.2 Past, Present, and Reasonably Foreseeable Future Actions

Past and Present Actions

There are few actions that have occurred or are currently taking place on lands in and around the proposed lease parcels. Recreation activities including sightseeing, wildlife viewing, nature viewing, photography, hiking, horseback riding, ATV trail riding, and camping have and will continue to take place in the region. Additionally, there are nine grazing allotments located within the proposed lease parcels. The grazing allotments include Salt Wash, Wood Hollow, North Sid and Charley, North Ferron, Salt Wash-Cinderella, Molen Tanks, Dry Wash, McCarty Canyon, and Fuller Bottom.

Reasonably Foreseeable Future Actions

It is reasonably foreseeable that the recreation and grazing activities that are currently taking place will continue to take place into the future. Additionally, based on trends over the past several years, parcels in this area will continue to be nominated for oil and gas leases and potentially developed accordingly. Any existing leases in this area can be reasonably expected to have exploration and potential development. It is also possible that future rights-of-way may be granted.

4.3.3 Cumulative Impacts

4.3.3.1 Air Quality

The Cumulative Impact Analysis Area (CIAA) for air quality is the area within and near the Price Field Office. Cumulative impacts are incorporated by reference from the Price Field Office RMP [BLM 2008a]. Based upon the relatively minor levels of oil and gas development and emissions anticipated for the proposed action, and the application of BMPs, it is unlikely that emissions from any subsequent development of the proposed leases would contribute to regional ozone formation in the project area, nor is it likely to contribute or cause exceedances of any NAAQS. Other emission contributors would continue at present rates such as construction, urban development, and personal vehicle use.

4.3.3.2 Areas of Critical Environmental Concern

The CIAA for ACECs consists of the Dry Wash, Molen Seep, and North Salt Wash sites of the Rock Art ACEC, in their entirety. The rationale for this boundary is that special management considerations are placed on the ACEC to protect the relevant and important cultural values. Past, present, and reasonably foreseeable future actions with the potential to contribute to surface disturbance include development of new and existing mineral rights or realty actions (e.g., oil wells, pump jacks, pipeline, road rights of ways, etc.). The proposed action would contribute to these cumulative impacts by making parcels 089, 090, 091, 093, 094, 095, 100, and 101 available for lease and mineral development.

The ACECs within the lease parcels are subject to No Surface Occupancy (NSO) stipulation UT-S-10; therefore, the potential for cumulative impacts from oil and gas development are reduced. As noted in the Price FEIS and Proposed RMP, the relevant and important values associated with the Rock Art ACECs would not be threatened with irreparable damage, either through management associated with a designated ACEC or from management associated with other resources and uses (Page 4-452). The following special management prescriptions from the PFO RMP are applied to these Rock Art ACEC sites, minimizing any potential cumulative impact from past, present, and other reasonably foreseeable future actions:

- Closed to disposal of mineral materials
- Recommended for withdrawal from locatable mineral entry
- Excluded for right-of-way grants
- Excluded from range improvements and land treatments except for watershed control structures where these will protect cultural resource values
- Immediate areas around rock art panels are closed to livestock use
- Excluded from private and commercial use of woodland products except for limited onsite collection of downed dead wood for campfires
- OHV use limited to designated routes

The No Action Alternative would not contribute to any cumulative impacts to relevant and important cultural values of the ACEC.

4.3.3.3 Cultural Resources

The CIAA for cultural resources is the entirety of the proposed lease parcels and the Rock Art ACECs. While the Proposed Action of leasing would not contribute to cumulative impacts on cultural resources, future development associated with leasing could contribute to potential impacts on cultural resources. Development of oil and gas wells involves the construction of physical facilities, which may be visible from archaeological sites. Over time, development could impact the setting and feeling of both the individual landscapes surrounding sites and the overall cultural landscape and feeling of the Molen Reef Area. Additionally, improvement and new development of roads could increase dust and potentially cover or abrade rock art panels. Road development may also increase public access, putting sites at risk from vandalism. Additionally, the impacts to the cultural resources have the potential to be impacted by the current and future recreation visitation through vandalism and/or dust generated from vehicle traffic on nearby roads. The current and future livestock grazing also has potential to impact the cultural resources through trampling artifacts and/or rubbing rock art.

4.3.3.4 Greenhouse Gas Emissions/Climate Change

Even though the Proposed Action of leasing would not contribute to cumulative effects on air resources, future foreseeable development could contribute to cumulative GHG emissions. The primary sources of emissions include the following:

- Fossil fuel combustion for construction and operation of oil and gas facilities – vehicles driving to and from production sites, engines that drive drill rigs, etc. These produce CO_2 in quantities that vary depending on the age, types, and conditions of the equipment as well as the targeted formation, locations of wells with respect to processing facilities and pipelines, and other site-specific factors.
- Fugitive CH_4 – CH_4 that escapes from wells (both gas and oil), oil storage, and various types of processing equipment. This is a major source of global CH_4 emissions. These emissions have been estimated for various aspects of the energy sector, and starting in 2011, producers are required under 40 C.F.R. §98, to estimate and report their CH_4 emissions to the EPA.
- Combustion of produced oil and gas – it is expected that operations will produce marketable quantities of oil and/or gas. Combustion of the oil and/or gas would release CO_2 into the atmosphere. Fossil fuel combustion is the largest source of global CO_2.

Since climate change and global warming are global phenomena, for purposes of this NEPA analysis, the analysis presented above about the direct and indirect effects of GHG emissions from the Proposed Action is also an analysis of the cumulative effects of the Proposed Action. The BLM has determined that this analysis "adequately addresses the cumulative impacts for climate change from the Proposed Action, and therefore a separate cumulative effects analysis for GHG emissions is not needed.

4.3.3.5 Lands with Wilderness Characteristics

The CIAA for lands with wilderness characteristics is the entirety of the Eagle Canyon lands with wilderness characteristics unit, the Sids Mountain lands with wilderness characteristics unit, and the adjacent Sids Mountain Wilderness Study Area. The past, present and foreseeable future actions with the potential to contribute to surface disturbance include development of new and existing mineral rights (leases) and/or realty actions (e.g., pipelines and road rights-of-way). Additionally, it is anticipated that the current grazing patterns and recreation activities will continue to occur throughout the CIAA.

Motorized recreational use, combined with the development of new roads if parcels are leased and developed, increases the likelihood of route proliferation. Route proliferation has the potential to impact wilderness characteristics by impacting the natural setting, the opportunity for solitude, and/or the opportunity for primitive recreation.

Livestock grazing has and will continue to occur throughout the CIAA. However, livestock grazing is an allowable use within lands with wilderness characteristics and Wilderness Study Areas.

As described in the Price FEIS and Proposed RMP, development of rights-of-way would remove opportunities for solitude and primitive recreation during construction. Any surface disturbance associated with development would affect naturalness. Following construction or development activities, naturalness would remain impacted for above-ground facilities, while reclamation of subsurface rights-of-way would reduce the loss of naturalness. Providing new access routes could diminish or eliminate wilderness characteristics in the areas adjacent to the access routes. The magnitude and duration of the impact would depend on the location of the route, type of access, and type of development being supported by the access. Because Wilderness Study Areas would be managed to maintain their wilderness characteristics, impacts would be mitigated and likely would result in only localized and short-term disturbance [BLM 2008a, p. 4-448].

4.3.3.6 Recreation

The CIAA for recreation consists of the San Rafael Swell SRMA. The past, present and foreseeable future actions with the potential to contribute to surface disturbance include development of new and existing mineral rights (leases) and/or realty actions (e.g., pipelines and road rights-of-way). Additionally, it is anticipated that the current grazing patterns and recreation activities will continue to occur throughout the CIAA. The Proposed Action would contribute to these cumulative impacts by leasing any of the 15 parcels.

All of the listed past, present, and reasonably foreseeable future actions listed above could displace recreationists or affect recreation by a loss or transformation of recreation opportunities. It can be anticipated that the future development of oil and gas could create noise and light pollution and increase traffic in the region. These actions could degrade resources important to recreationists in the San Rafael Swell SRMA (e.g., semi-primitive, non-motorized experience).

Livestock grazing has and will continue to occur throughout the CIAA. In order to minimize conflict between livestock grazing and recreationists, grazing is prohibited from occurring within recreation sites. Although livestock grazing and recreation are generally compatible uses of

public lands, the addition of the ground disturbing activities and the associated impacts of the other reasonably foreseeable future actions may increase the likelihood of displacing recreationists.

4.3.3.7 Plants – BLM Sensitive Species

The CIAA for BLM Sensitive Species includes the PFO planning area. However, as suitable and occupied habitats have not been completely mapped and population estimates are largely unknown, accurate disturbance estimates for the CIAA cannot be precisely quantified. Cumulative impacts to BLM Sensitive Species is directly associated with their ongoing habitat losses, sensitivity to disturbance, and declining population numbers. These species would be more sensitive than other, more common species to impacts related to development within the CIAA. Past, present, and reasonably foreseeable surface-disturbing land uses have reduced, and will likely continue to reduce, the quality and quantity of suitable and occupied habitats in the CIAA for BLM Sensitive Species. Based on direct and indirect cumulative impacts, ongoing and future oil and gas development and other land uses such as OHV travel, forage utilization by livestock and wildlife, and noxious weed encroachment and management in the CIAA could cumulatively and incrementally reduce and fragment habitats for BLM Sensitive Species.

4.3.3.8 Visual Resources

The CIAA for visual resources is the proposed lease parcels. The past, present, and reasonably foreseeable future actions with the potential to contribute to surface disturbance include development of new and existing mineral rights (leases) and/or realty actions (e.g., pipelines and road rights-of-way). The Proposed Action would contribute to these cumulative impacts by leasing any of the 15 parcels. As stated in the Price FEIS and Proposed RMP, "impacts would be caused by surface disturbance from production, exploration, and construction of drilling and mining facilities. However, these projects would be required to conform to an area's VRM objectives though design, camouflage, and/or topographic screening. These management actions would prevent their incremental impacts on visual resources from becoming dominant features on the landscape in sensitive VRM designations" [BLM 2008a, p. 4-444]. When a plan of development is created, site-specific visual contrast analysis would be conducted as appropriate per BLM policy to determine if development is in compliance with VRM standards.

4.3.3.9 Wildlife – BLM Sensitive Species

The CIAA cumulative impact area for BLM Sensitive Species is the Price Field Office. Cumulative impacts are incorporated by reference to PFO RMP [BLM 2008a]. Current and future uses and impacts of the cumulative impact area may include oil and gas development, urbanization and increased recreational impacts. Future development could result in a loss of white-tailed prairie dog, kit fox and bat habitat. The past, present, and foreseeable future actions with the potential to contribute to surface disturbance include development of new and existing mineral rights or realty actions (for example, pipeline or road rights of way) or the continuation of agricultural activities. As cumulative activities occur, adjacent habitats may be avoided due to human presence. Cumulative activities could also alter potential prairie dogs habitat, making it less suitable for the establishment of colonies, thus affecting other species that rely on white-tailed prairie dog and their habitat for survival. Habitat quality for these species can also be degraded by the introduction of noxious and invasive weeds. Weed invasions may lead to a decrease in the amount of native perennials and bare ground, thereby degrading habitat for

white-tailed prairie dog by decreasing visibility, forage quality. Past, present, and future land uses have reduced and will likely continue to reduce the quality and quantity of habitats for wildlife species. Habitat alteration occurring throughout the range of these species would potentially reduce the ability of such species to recover. Cumulative impacts include habitat fragmentation, loss of prey species, increased predation, and loss of breeding habitat. The No Action Alternative would not result in an accumulation of impacts.

CHAPTER 5 – COORDINATION AND CONSULTATION

This chapter describes the consultation and coordination that occurred as part of the development of this environmental assessment. Below you will find a list of persons, agencies, and organizations consulted, as well as a list of BLM preparers.

5.1 LIST OF PERSONS, AGENCIES, AND ORGANIZATIONS CONSULTED

Name	Purpose & Authorities for Consultation or Coordination	Findings & Conclusions
U.S. National Park Service	Consult with the NPS as a leasing program partner.	Coordination is ongoing.
U.S. Fish & Wildlife Service	Information on Consultation, under Section 7 of the Endangered Species Act (16 USC 1531)	Coordination is ongoing.
Utah Division of Wildlife Resources	Coordination with UDWR as the agency with expertise on wildlife species.	Coordination is ongoing.
U. S. Forest Service	Consult USFS as a leasing program partner.	Coordination is ongoing.
School and Institutional Trust Lands Administration	Coordinated with as leasing program partner.	Coordination is ongoing.
Public Lands Policy Coordination Office	Coordinated with as leasing program partner.	Coordination is ongoing.
Utah State Historic Preservation Office	Consultation for undertakings, as required by the National Historic Preservation Act (NHPA) (54 USC 300101 et seq.)	Coordination is ongoing. SHPO was notified of the project via letter on March 24, 2017 and has participated in multiple consulting party meetings.
Southern Utah Wilderness Alliance (SUWA)	Consultation conducted with consulting parties under the direction of the National Historic Preservation Act (NHPA) (54 USC 300101 et seq.)	Coordination is ongoing. Letter about undertaking sent March 24, 2017. SUWA responded contesting preliminary determination of "no adverse effect" for cultural resources in a letter submitted to the BLM April 25, 2017. Attended consulting parties meeting May 11, 2017.

Utah Rock Art Research Association	Consultation conducted with consulting parties under the direction of the National Historic Preservation Act (NHPA) (54 USC 300101 et seq.)	Coordination is ongoing. Letter about undertaking sent March 24, 2017. URARA disagreed with preliminary determination of "no adverse effect" for cultural resources in a letter submitted to the BLM April 24, 2017. Attended consulting parties meeting May 11, 2017.
Johnathan Bailey	Consultation conducted with consulting parties under the direction of the National Historic Preservation Act (NHPA) (54 USC 300101 et seq.)	Notified of undertaking by Diane Orr of URARA. Provided comments in association with URARA comments received April 24, 2017. Attended consulting parties meeting May 11, 2017.
Old Spanish Trail Association, National Trails, Colorado Plateau Archaeological Alliance, Utah Statewide Archaeological Council, Emery County Public Lands Administration, Utah Statewide Archaeological Council, Utah School and Institutional Trust Lands Administration , Public Lands Policy Coordinating Office	Consultation conducted with consulting parties under the direction of the National Historic Preservation Act (NHPA) (54 USC 300101 et seq.)	Letter about undertaking sent March 24, 2017. No response received.
Paiute Tribe of Utah (PITU), Ute Indian Tribe, Hopi Tribe, Navaho Nation, Southern Ute Indian Tribe, Kaibab Band of Paiute Indians of the Paiute Reservation, Northwest Band of Shoshone, Fallon Paiute-Shoshone Tribes, San Juan Southern Paiute, Shoshone-Bannock Tribes, Pueblo of Jemez, Ute Mountain Ute Tribe, Eastern Shoshone Tribe	Consultation as required by the American Indian Religious Freedom Act of 1978 (42 USC 1531) and NHPA (54 USC 300101 et seq.)	Coordination is ongoing. The Hopi Tribe responded to letter sent March 7, 2017 in letter dated March 23, 2017. They noted concerns about rock art and potential for indirect and cumulative effects. The BLM did not receive this initial response, until much later when it was included as an attachment to a May 1, 2017 letter. . The Hopi disagreed with preliminary finding of "no adverse effect". The Hopi Tribe sent an additional letter dated May 1, 2017 to BLM. In the May 1, 2017 letter the Hopi requested deferral of all parcels within the proposed lease sale due to cultural resource concerns until additional

		cultural resource survey is conducted. BLM called Hopi on May 1, 2017 to suggest a face to face meeting. A meeting time was not agreed to during the May 1, 2017 call. The BLM reached out to the Hopi again on June 9, 2017 to discuss a potential meeting. The Hopi failed to respond to the request. The Price BLM archaeologist met with the Uintah-Ouray tribe on May 17, 2017 to discuss any potential concerns with the leasing of the proposed parcels. The tribal representative present stated no concerns with leasing in the area but recommended deferring any areas where burials and rock art occur together. Also see section 5.3 for tribal participation in consulting party process

5.2 LIST OF PREPARERS AND PARTICIPANTS

Name	Title	Resource
Stephanie Howard	NEPA Coordinator	Air Quality
Stephanie Bauer Jeffery Brower Stuart Bedke	Rangeland Management Specialist Hydrologist Fire Management	Invasive/Non-native Species, Hazardous or SolidWastes, Fire Management, Forest Management, Wild Horses
Jeffery Brower	Hydrologist	Floodplains, Surface Hydrology, Soils, Water Quality (Surface), Wetlands & Riparian Zones, Prime and Unique Farmlands
Jacob Palma	NEPA Coordinator	Socioeconomics, Environmental Justice, Visual Resources, Lands with Wilderness Characteristics, Wilderness Study Areas, Wild and Scenic Rivers, Access and Transportation, Reecreation
Michael Glasson Don Stephens Michael Leschin Jeffery Brower	Geologist Geologist Geologist Hydrologist	Ground Hydrology, Fluid Minerals, Paleontological Resources, Water Quality (Ground)

Name	Title	Resource
Michael Glasson	Geologist	Minerals, Solid
Dana Truman	Wildlife Biologist	Migratory Birds, Special Status Animal Species, Wildlife (Aquatic & Terrestrial),
Dana Truman	Wildlife Biologist	Special Status Plant Species
Stephanie Bauer	Rangeland Management Specialist	Upland Vegetation, Livestock Operations
Nicole Lohman	Archeologist	Cultural Resources, Native American Religious Concerns, Areas of Critical Environmental Concern
Connie Leschin	Realty Specialist	Realty Authorizations, Land Tenure

CHAPTER 6 – References, Acronyms, and Appendices

6.1 REFERENCES CITED

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6.2 LIST OF ACRONYMS

List acronyms used in the EA and what they mean.

APD	Application for Permit to Drill

ACEC	Area of Critical Environmental Concern
BLM	Bureau of Land Management
BMP	Best Management Practices
CBNG	Coalbed Natural Gas
CFR	Code of Federal Regulations
CIAA	Cumulative Impact Analysis Area
CSU	Conditional Surface Use
DR	Decision Record
EA	Environmental Assessment
EIS	Environmental Impact Statement
ENBB	Environmental Notification Bulletin Board
EOI	Expression of Interest
ESA	Endangered Species Act
FLPMA	Federal Land Policy and Management Act of 1976
FONSI	Finding of No Significant Impact
GIS	Geographic Information System
IDPR	Interdisciplinary Parcel Review
IM	Instruction Memorandum
LUP	Land Use Plan
NAGPRA	Native American Graves Protection and Repatriation Act
NCLS	Notice of Competitive Lease Sale
NEPA	National Environmental Policy Act
NNL	National Natural Landmark
NHPA	National Historic Preservation Act
NPS	National Park Service
NSO	No Surface Occupancy

PFO RMP	Price Field Office Resource Management Plan
PLPCO	Public Land Policy Coordination Office
RMP	ROD Resource Management Plan Record of Decision
RMP	Resource Management Plan
RFD	Reasonably Foreseeable Development
ROD	Record of Decision
SHPO	State Historic Preservation Office
SITLA	School and Institutional Trust Lands Administration
UDWR	Utah Division of Wildlife Resources
USDI	United States Department of the Interior
USO	Utah State Office
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
WO	Washington Office
WSA	Wilderness Study Area

6.3 LIST OF APPENDICES

Appendix A –Proposed Action with Stipulations for Lease
Appendix B – Recommended Parcel Deferrals (Reserved)
Appendix C – Stipulation and Lease Notice Exhibits
Appendix D – Maps
Appendix E – Response to Public Comments (Reserved)
Appendix F – Interdisciplinary Team Checklist
Appendix G – Parcel Pictures

Appendix A – Proposed Action with Stipulations for Lease

The two standard stipulations from the H-3120, *Endangered Species Act* and *Cultural Resources* as described in Section 2.3. will be applied to all parcels.

UT1116 – 088
T. 21 S., R. 8 E., Salt Lake
Secs. 1, 11 and 12: All.
2,095.30 Acres
Emery County, Utah
Price Field Office

STIPULATIONS
UT-S-01: Air Quality
UT-S-97: No Surface Occupancy – Fragile Soils/Slopes Greater than 40 Percent
UT-S-101: Controlled Surface Use – Fragile Soils/Slopes 20-40 Percent
UT-S-127: No Surface Occupancy – Intermittent and Perennial Streams
UT-S-169: Controlled Surface Use – Cultural Resource Inventories
UT-S-176: Controlled Surface Use – Fossil Resources (Preconstruction Surveys)
UT-S-177: Controlled Surface Use – Fossil Resources
UT-S-260 Timing Limitation – Raptor Habitat
UT-S-285: Timing Limitation – Migratory Bird Nesting
UT-S-305: Controlled Surface Use – Noxious Weed

LEASE NOTICES
UT-LN-25: White-Tailed and Gunnison Prairie Dog
UT-LN-44: Raptors
UT-LN-45: Migratory Bird
UT-LN-49: Utah Sensitive Species
UT-LN-51: Special Status Plants: Not Federally Listed
UT-LN-99: Regional Ozone Formations Controls
UT-LN-102: Air Quality Analysis

UT-LN-104: Burrowing Owl Habitat
T&E-03: Endangered Fish of the Upper Colorado River Drainage Basin
T&E-05: Listed Plant Species
T&E-15: Wright Fishhook Cactus (*Sclerocactus wrightiae*)
T&E-17: San Rafael Cactus (*Pediocactus Despainii*)

UT1217 – 089
T. 21 S., R. 8 E., Salt Lake
Sec. 3: All;
Sec. 4: Lots 1, 8-10, NESE, S2SE;
Sec. 8: E2SE;
Sec. 9: NE, NENW, S2NW, S2;
Sec. 10: All.
2,421.84 Acres
Emery County, Utah
Price Field Office

STIPULATIONS
UT-S-01: Air Quality
UT-S-10: No Surface Occupancy – Rock Art ACEC
UT-S-97: No Surface Occupancy – Fragile Soils/Slopes Greater than 40 Percent
UT-S-101: Controlled Surface Use – Fragile Soils/Slopes 20-40 Percent
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UT-LN-45: Migratory Bird
UT-LN-49: Utah Sensitive Species
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UT-LN-102: Air Quality Analysis
UT-LN-104: Burrowing Owl Habitat
T&E-03: Endangered Fish of the Upper Colorado River Drainage Basin
T&E-05: Listed Plant Species
T&E-15: Wright Fishhook Cactus (*Sclerocactus wrightiae*)
T&E-17: San Rafael Cactus (*Pediocactus Despainii*)

UT1217 – 090
T. 21 S., R. 8 E., Salt Lake
Secs. 13, 14, 23 and 24: All.
2,560.00 Acres
Emery County, Utah
Price Field Office

STIPULATIONS
UT-S-01: Air Quality
UT-S-10: No Surface Occupancy – Rock Art ACEC
UT-S-97: No Surface Occupancy – Fragile Soils/Slopes Greater than 40 Percent
UT-S-101: Controlled Surface Use – Fragile Soils/Slopes 20-40 Percent
UT-S-127: No Surface Occupancy – Intermittent and Perennial Streams
UT-S-169: Controlled Surface Use – Cultural Resource Inventories
UT-S-176: Controlled Surface Use – Fossil Resources (Preconstruction Surveys)
UT-S-177: Controlled Surface Use – Fossil Resources
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UT-S-285: Timing Limitation – Migratory Bird Nesting
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UT-LN-44: Raptors
UT-LN-45: Migratory Bird
UT-LN-49: Utah Sensitive Species
UT-LN-51: Special Status Plants: Not Federally Listed
UT-LN-99: Regional Ozone Formations Controls
UT-LN-102: Air Quality Analysis
UT-LN-104: Burrowing Owl Habitat
T&E-03: Endangered Fish of the Upper Colorado River Drainage Basin
T&E-05: Listed Plant Species
T&E-15: Wright Fishhook Cactus (*Sclerocactus wrightiae*)
T&E-17: San Rafael Cactus (*Pediocactus Despainii*)

UT1217 – 091
T. 21 S., R. 8 E., Salt Lake
Secs. 15, 21, 22 and 27: All.
2,560.00 Acres
Emery County, Utah
Price Field Office

STIPULATIONS
UT-S-01: Air Quality
UT-S-10: No Surface Occupancy – Rock Art ACEC
UT-S-97: No Surface Occupancy – Fragile Soils/Slopes Greater than 40 Percent
UT-S-101: Controlled Surface Use – Fragile Soils/Slopes 20-40 Percent
UT-S-127: No Surface Occupancy – Intermittent and Perennial Streams
UT-S-169: Controlled Surface Use – Cultural Resource Inventories
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UT-S-177: Controlled Surface Use – Fossil Resources
UT-S-260 Timing Limitation – Raptor Habitat
UT-S-285: Timing Limitation – Migratory Bird Nesting
UT-S-305: Controlled Surface Use – Noxious Weed

LEASE NOTICES
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UT-LN-44: Raptors
UT-LN-45: Migratory Bird
UT-LN-49: Utah Sensitive Species
UT-LN-51: Special Status Plants: Not Federally Listed
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UT-LN-102: Air Quality Analysis
UT-LN-104: Burrowing Owl Habitat
T&E-03: Endangered Fish of the Upper Colorado River Drainage Basin
T&E-05: Listed Plant Species
T&E-15: Wright Fishhook Cactus (*Sclerocactus wrightiae*)
T&E-17: San Rafael Cactus (*Pediocactus Despainii*)

UT1217 – 092
T. 21 S., R. 8 E., Salt Lake
Sec. 17: E2, E2SW;
Sec. 19: S2NE, SE;
Sec. 20: All.
1,280.00 Acres
Emery County, Utah
Price Field Office

STIPULATIONS
UT-S-01: Air Quality
UT-S-97: No Surface Occupancy – Fragile Soils/Slopes Greater than 40 Percent
UT-S-101: Controlled Surface Use – Fragile Soils/Slopes 20-40 Percent
UT-S-127: No Surface Occupancy – Intermittent and Perennial Streams
UT-S-169: Controlled Surface Use – Cultural Resource Inventories
UT-S-176: Controlled Surface Use – Fossil Resources (Preconstruction Surveys)
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UT-LN-45: Migratory Bird
UT-LN-49: Utah Sensitive Species
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UT-LN-99: Regional Ozone Formations Controls
UT-LN-102: Air Quality Analysis
UT-LN-104: Burrowing Owl Habitat
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T&E-05: Listed Plant Species
T&E-15: Wright Fishhook Cactus (*Sclerocactus wrightiae*)
T&E-17: San Rafael Cactus (*Pediocactus Despainii*)

UT1217 – 093
T. 21 S., R. 8 E., Salt Lake
Secs. 25, 26 and 35: All.
1,920.00 Acres
Emery County, Utah
Price Field Office

STIPULATIONS
UT-S-01: Air Quality
UT-S-10: No Surface Occupancy – Rock Art ACEC
UT-S-97: No Surface Occupancy – Fragile Soils/Slopes Greater than 40 Percent
UT-S-101: Controlled Surface Use – Fragile Soils/Slopes 20-40 Percent
UT-S-127: No Surface Occupancy – Intermittent and Perennial Streams
UT-S-169: Controlled Surface Use – Cultural Resource Inventories
UT-S-260 Timing Limitation – Raptor Habitat
UT-S-285: Timing Limitation – Migratory Bird Nesting
UT-S-305: Controlled Surface Use – Noxious Weed

LEASE NOTICES
UT-LN-25: White-Tailed and Gunnison Prairie Dog
UT-LN-44: Raptors
UT-LN-45: Migratory Bird
UT-LN-49: Utah Sensitive Species
UT-LN-51: Special Status Plants: Not Federally Listed
UT-LN-99: Regional Ozone Formations Controls
UT-LN-102: Air Quality Analysis

UT-LN-104: Burrowing Owl Habitat
T&E-03: Endangered Fish of the Upper Colorado River Drainage Basin
T&E-05: Listed Plant Species
T&E-15: Wright Fishhook Cactus (*Sclerocactus wrightiae*)
T&E-17: San Rafael Cactus (*Pediocactus Despainii*)

UT1217 – 094
T. 21 S., R. 8 E., Salt Lake
Secs. 28 and 29: All;
Sec. 33: N2, NESW, S2SW, SE;
Sec. 34: All.
2,520.00 Acres
Emery County, Utah
Price Field Office

STIPULATIONS
UT-S-01: Air Quality
UT-S-10: No Surface Occupancy – Rock Art ACEC
UT-S-97: No Surface Occupancy – Fragile Soils/Slopes Greater than 40 Percent
UT-S-101: Controlled Surface Use – Fragile Soils/Slopes 20-40 Percent
UT-S-127: No Surface Occupancy – Intermittent and Perennial Streams
UT-S-169: Controlled Surface Use – Cultural Resource Inventories
UT-S-176: Controlled Surface Use – Fossil Resources (Preconstruction Surveys)
UT-S-177: Controlled Surface Use – Fossil Resources
UT-S-260 Timing Limitation – Raptor Habitat
UT-S-285: Timing Limitation – Migratory Bird Nesting
UT-S-305: Controlled Surface Use – Noxious Weed

LEASE NOTICES
UT-LN-25: White-Tailed and Gunnison Prairie Dog
UT-LN-44: Raptors
UT-LN-45: Migratory Bird
UT-LN-49: Utah Sensitive Species
UT-LN-51: Special Status Plants: Not Federally Listed
UT-LN-99: Regional Ozone Formations Controls
UT-LN-102: Air Quality Analysis
UT-LN-104: Burrowing Owl Habitat
T&E-03: Endangered Fish of the Upper Colorado River Drainage Basin
T&E-05: Listed Plant Species
T&E-15: Wright Fishhook Cactus (*Sclerocactus wrightiae*)
T&E-17: San Rafael Cactus (*Pediocactus Despainii*)

UT1217 – 095
T. 21 S., R. 8 E., Salt Lake
Sec. 30: Lot 4, E2, E2NW, E2SW;
Sec. 31: All.
1,136.20 Acres
Emery County, Utah
Price Field Office

STIPULATIONS
UT-S-01: Air Quality
UT-S-10: No Surface Occupancy – Rock Art ACEC
UT-S-97: No Surface Occupancy – Fragile Soils/Slopes Greater than 40 Percent
UT-S-101: Controlled Surface Use – Fragile Soils/Slopes 20-40 Percent
UT-S-127: No Surface Occupancy – Intermittent and Perennial Streams
UT-S-169: Controlled Surface Use – Cultural Resource Inventories
UT-S-176: Controlled Surface Use – Fossil Resources (Preconstruction Surveys)
UT-S-177: Controlled Surface Use – Fossil Resources
UT-S-260 Timing Limitation – Raptor Habitat
UT-S-285: Timing Limitation – Migratory Bird Nesting
UT-S-305: Controlled Surface Use – Noxious Weed

LEASE NOTICES
UT-LN-25: White-Tailed and Gunnison Prairie Dog
UT-LN-44: Raptors
UT-LN-45: Migratory Bird
UT-LN-49: Utah Sensitive Species
UT-LN-51: Special Status Plants: Not Federally Listed
UT-LN-99: Regional Ozone Formations Controls
UT-LN-102: Air Quality Analysis
UT-LN-104: Burrowing Owl Habitat
T&E-03: Endangered Fish of the Upper Colorado River Drainage Basin
T&E-05: Listed Plant Species
T&E-15: Wright Fishhook Cactus (*Sclerocactus wrightiae*)
T&E-17: San Rafael Cactus (*Pediocactus Despainii*)

UT1217 – 096
T. 20 S., R. 9 E., Salt Lake
Sec. 23: E2SW, SE;
Secs. 26, 27 and 28: All.
2,160.00 Acres
Emery County, Utah
Price Field Office

STIPULATIONS
UT-S-01: Air Quality
UT-S-97: No Surface Occupancy – Fragile Soils/Slopes Greater than 40 Percent
UT-S-101: Controlled Surface Use – Fragile Soils/Slopes 20-40 Percent
UT-S-127: No Surface Occupancy – Intermittent and Perennial Streams
UT-S-160: Controlled Surface Use – Visual Resources – VRM II
UT-S-169: Controlled Surface Use – Cultural Resource Inventories
UT-S-260: Timing Limitation – Raptor Habitat
UT-S-285: Timing Limitation – Migratory Bird Nesting
UT-S-305: Controlled Surface Use – Noxious Weed

LEASE NOTICES
UT-LN-21: Bighorn Sheep Habitat
UT-LN-25: White-Tailed and Gunnison Prairie Dog
UT-LN-44: Raptors
UT-LN-45: Migratory Bird
UT-LN-49: Utah Sensitive Species
UT-LN-51: Special Status Plants: Not Federally Listed
UT-LN-99: Regional Ozone Formations Controls
UT-LN-102: Air Quality Analysis
UT-LN-104: Burrowing Owl Habitat
T&E-03: Endangered Fish of the Upper Colorado River Drainage Basin
T&E-05: Listed Plant Species
T&E-15: Wright Fishhook Cactus (*Sclerocactus wrightiae*)
T&E-17: San Rafael Cactus (*Pediocactus Despainii*)

UT1217 – 097
T. 20 S., R. 9 E., Salt Lake
Secs. 33, 34 and 35: All.
1,920.00 Acres
Emery County, Utah
Price Field Office

STIPULATIONS
UT-S-01: Air Quality
UT-S-97: No Surface Occupancy – Fragile Soils/Slopes Greater than 40 Percent
UT-S-101: Controlled Surface Use – Fragile Soils/Slopes 20-40 Percent
UT-S-126: No Surface Occupancy – Natural Springs
UT-S-127: No Surface Occupancy – Intermittent and Perennial Streams
UT-S-160: Controlled Surface Use – Visual Resources – VRM II
UT-S-169: Controlled Surface Use – Cultural Resource Inventories
UT-S-260 Timing Limitation – Raptor Habitat
UT-S-285: Timing Limitation – Migratory Bird Nesting
UT-S-305: Controlled Surface Use – Noxious Weed

LEASE NOTICES
UT-LN-21: Bighorn Sheep Habitat
UT-LN-25: White-Tailed and Gunnison Prairie Dog
UT-LN-44: Raptors
UT-LN-45: Migratory Bird
UT-LN-49: Utah Sensitive Species
UT-LN-51: Special Status Plants: Not Federally Listed
UT-LN-99: Regional Ozone Formations Controls
UT-LN-102: Air Quality Analysis
UT-LN-104: Burrowing Owl Habitat
T&E-03: Endangered Fish of the Upper Colorado River Drainage Basin
T&E-05: Listed Plant Species
T&E-15: Wright Fishhook Cactus (*Sclerocactus wrightiae*)
T&E-17: San Rafael Cactus (*Pediocactus Despainii*)

UT1217 – 098
T. 20 S., R. 9 E., Salt Lake
Sec. 31: Lots 3, 4, SENW, E2SW, SE;
T. 21 S., R. 9 E., Salt Lake
Secs. 5 and 6: All.
2,089.00 Acres
Emery County, Utah
Price Field Office

STIPULATIONS
UT-S-01: Air Quality
UT-S-97: No Surface Occupancy – Fragile Soils/Slopes Greater than 40 Percent
UT-S-101: Controlled Surface Use – Fragile Soils/Slopes 20-40 Percent
UT-S-126: No Surface Occupancy – Natural Springs
UT-S-127: No Surface Occupancy – Intermittent and Perennial Streams
UT-S-169: Controlled Surface Use – Cultural Resource Inventories
UT-S-260 Timing Limitation – Raptor Habitat
UT-S-285: Timing Limitation – Migratory Bird Nesting
UT-S-305: Controlled Surface Use – Noxious Weed

LEASE NOTICES
UT-LN-25: White-Tailed and Gunnison Prairie Dog
UT-LN-44: Raptors
UT-LN-45: Migratory Bird
UT-LN-49: Utah Sensitive Species
UT-LN-51: Special Status Plants: Not Federally Listed
UT-LN-99: Regional Ozone Formations Controls
UT-LN-102: Air Quality Analysis

UT-LN-104: Burrowing Owl Habitat

T&E-03: Endangered Fish of the Upper Colorado River Drainage Basin
T&E-05: Listed Plant Species
T&E-15: Wright Fishhook Cactus (*Sclerocactus wrightiae*)
T&E-17: San Rafael Cactus (*Pediocactus Despainii*)

UT1217 – 099
T. 21 S., R. 9 E., Salt Lake
Secs. 3, 4 and 9: All.
2,394.00 Acres
Emery County, Utah
Price Field Office

STIPULATIONS
UT-S-01: Air Quality
UT-S-97: No Surface Occupancy – Fragile Soils/Slopes Greater than 40 Percent
UT-S-101: Controlled Surface Use – Fragile Soils/Slopes 20-40 Percent
UT-S-126: No Surface Occupancy – Natural Springs
UT-S-127: No Surface Occupancy – Intermittent and Perennial Streams
UT-S-160: Controlled Surface Use – Visual Resources – VRM II
UT-S-169: Controlled Surface Use – Cultural Resource Inventories
UT-S-260 Timing Limitation – Raptor Habitat
UT-S-285: Timing Limitation – Migratory Bird Nesting
UT-S-305: Controlled Surface Use – Noxious Weed

LEASE NOTICES
UT-LN-21: Bighorn Sheep Habitat
UT-LN-25: White-Tailed and Gunnison Prairie Dog
UT-LN-44: Raptors
UT-LN-45: Migratory Bird
UT-LN-49: Utah Sensitive Species
UT-LN-51: Special Status Plants: Not Federally Listed
UT-LN-99: Regional Ozone Formations Controls
UT-LN-102: Air Quality Analysis
UT-LN-104: Burrowing Owl Habitat
T&E-03: Endangered Fish of the Upper Colorado River Drainage Basin
T&E-05: Listed Plant Species
T&E-15: Wright Fishhook Cactus (*Sclerocactus wrightiae*)
T&E-17: San Rafael Cactus (*Pediocactus Despainii*)

UT1217 – 100
T. 21 S., R. 9 E., Salt Lake

Secs. 7, 8, 17 and 18: All.
2,518.00 Acres
Emery County, Utah
Price Field Office

STIPULATIONS
UT-S-01: Air Quality
UT-S-10: No Surface Occupancy – Rock Art ACEC
UT-S-97: No Surface Occupancy – Fragile Soils/Slopes Greater than 40 Percent
UT-S-101: Controlled Surface Use – Fragile Soils/Slopes 20-40 Percent
UT-S-126: No Surface Occupancy – Natural Springs
UT-S-127: No Surface Occupancy – Intermittent and Perennial Streams
UT-S-169: Controlled Surface Use – Cultural Resource Inventories
UT-S-260 Timing Limitation – Raptor Habitat
UT-S-285: Timing Limitation – Migratory Bird Nesting
UT-S-305: Controlled Surface Use – Noxious Weed

LEASE NOTICES
UT-LN-25: White-Tailed and Gunnison Prairie Dog
UT-LN-44: Raptors
UT-LN-45: Migratory Bird
UT-LN-49: Utah Sensitive Species
UT-LN-51: Special Status Plants: Not Federally Listed
UT-LN-99: Regional Ozone Formations Controls
UT-LN-102: Air Quality Analysis
UT-LN-104: Burrowing Owl Habitat
T&E-03: Endangered Fish of the Upper Colorado River Drainage Basin
T&E-05: Listed Plant Species
T&E-15: Wright Fishhook Cactus (*Sclerocactus wrightiae*)
T&E-17: San Rafael Cactus (*Pediocactus Despainii*)

UT1217 – 101
T. 21 S., R. 9 E., Salt Lake
Sec. 15: W2NW, W2SW;
Secs. 19 and 20: All;
Sec. 21: N2, SW, NWSE;
Sec. 22: NW.
2,100.00 Acres
Emery County, Utah
Price Field Office

STIPULATIONS
UT-S-01: Air Quality

UT-S-10: No Surface Occupancy – Rock Art ACEC
UT-S-97: No Surface Occupancy – Fragile Soils/Slopes Greater than 40 Percent
UT-S-101: Controlled Surface Use – Fragile Soils/Slopes 20-40 Percent
UT-S-126: No Surface Occupancy – Natural Springs
UT-S-127: No Surface Occupancy – Intermittent and Perennial Streams
UT-S-169: Controlled Surface Use – Cultural Resource Inventories
UT-S-260 Timing Limitation – Raptor Habitat
UT-S-285: Timing Limitation – Migratory Bird Nesting
UT-S-305: Controlled Surface Use – Noxious Weed

LEASE NOTICES
UT-LN-21: Bighorn Sheep Habitat
UT-LN-25: White-Tailed and Gunnison Prairie Dog
UT-LN-44: Raptors
UT-LN-45: Migratory Bird
UT-LN-49: Utah Sensitive Species
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UT-LN-99: Regional Ozone Formations Controls
UT-LN-102: Air Quality Analysis
UT-LN-104: Burrowing Owl Habitat
T&E-03: Endangered Fish of the Upper Colorado River Drainage Basin
T&E-05: Listed Plant Species
T&E-15: Wright Fishhook Cactus (*Sclerocactus wrightiae*)
T&E-17: San Rafael Cactus (*Pediocactus Despainii*)

UT1217 – 102
T. 21 S., R. 9 E., Salt Lake
Sec. 28: W2;
Secs. 29, 30 and 31: All;
Sec. 33: W2NW, W2SW.
2,361.00 Acres
Emery County, Utah
Price Field Office

STIPULATIONS
UT-S-01: Air Quality
UT-S-97: No Surface Occupancy – Fragile Soils/Slopes Greater than 40 Percent
UT-S-101: Controlled Surface Use – Fragile Soils/Slopes 20-40 Percent
UT-S-126: No Surface Occupancy – Natural Springs
UT-S-127: No Surface Occupancy – Intermittent and Perennial Streams
UT-S-160: Controlled Surface Use – Visual Resources – VRM II
UT-S-169: Controlled Surface Use – Cultural Resource Inventories
UT-S-260 Timing Limitation – Raptor Habitat
UT-S-285: Timing Limitation – Migratory Bird Nesting

UT-S-305: Controlled Surface Use – Noxious Weed

LEASE NOTICES
UT-LN-21: Bighorn Sheep Habitat
UT-LN-25: White-Tailed and Gunnison Prairie Dog
UT-LN-44: Raptors
UT-LN-45: Migratory Bird
UT-LN-49: Utah Sensitive Species
UT-LN-51: Special Status Plants: Not Federally Listed
UT-LN-99: Regional Ozone Formations Controls
UT-LN-102: Air Quality Analysis
UT-LN-104: Burrowing Owl Habitat
T&E-03: Endangered Fish of the Upper Colorado River Drainage Basin
T&E-05: Listed Plant Species
T&E-15: Wright Fishhook Cactus (*Sclerocactus wrightiae*)
T&E-17: San Rafael Cactus (*Pediocactus Despainii*)

Appendix B – Recommended Parcel Deferrals

Reserved

Appendix C – Stipulation and Lease Notice Exhibits

NUMBER	LEASE STIPULATIONS
H-3120-1	The Cultural Resources and Endangered Species Act Stipulations from the Competitive Leasing Handbook that are part of the proposed action, Section 2.3.2, will be attached to all leases.
UT-S-01	AIR QUALITY All new and replacement internal combustion gas field engines of less than or equal to 300 design-rated horsepower shall not emit more than 2 grams of NO_x per horsepower-hour. Exception: This requirement does not apply to gas field engines of less than or equal to 40 design-rated horsepower. Modification: None Waiver: None AND All new and replacement internal combustion gas field engines of greater than 300 design rated horsepower must not emit more than 1.0 gram of NO_x per horsepower-hour. Exception: None Modification: None Waiver: None
UT-S-10	NO SURFACE OCCUPANCY – ROCK ART ACEC NSO for cultural values within Rock Art ACEC and to retain the cultural character of some of the best examples of prehistoric rock art in the Colorado Plateau. The Rock Art ACEC's are: Black Dragon, Head of Sinbad, Rochester/Muddy Petroglyphs, Lone Warrior, Sand Cove Spring, King's Crown, Short Creek, Dry Wash, North Salt Wash, Molen Seep, Big Hole, Cottonwood Canyon, Wild Horse Canyon, and Grassy Trail. Exception: None Modification: None Waiver: None
UT-S-97	NO SURFACE OCCUPANCY – FRAGILE SOILS/SLOPES GREATER THAN 40 PERCENT No surface occupancy on slopes greater than 40 percent. Exception: If after an environment analysis the authorized officer determines that it would cause undue or unnecessary degradation to pursue other placement alternatives; surface occupancy in the area may be authorized. In addition, a plan from the operator and BLM's approval of the plan shall be required before construction and maintenance could begin. The plan would have to include: An erosion control strategy GIS modeling Proper survey and design by a certified engineer. Modification: None Waiver: None
UT-S-101	CONTROLLED SURFACE USE – FRAGILE SOILS/SLOPES 20-40 PERCENT In surface disturbing proposals regarding construction on slopes of 20 percent to 40 percent, include an approved erosion control strategy and topsoil

	segregation/restoration plan. Such construction must be properly surveyed and designed by a certified engineer and approved by the BLM prior to project implementation, construction, or maintenance. Exception: If after an environment analysis the authorized officer determines that it would cause undue or unnecessary degradation to pursue other placement alternatives; surface occupancy in the area may be authorized. In addition, a plan from the operator and BLM's approval of the plan would be required before construction and maintenance could begin. The plan must include: An erosion control strategy GIS modeling Proper survey and design by a certified engineer. Modification: Modifications also may be granted if a more detailed analysis is conducted and shows that impacts can be mitigated, e.g., Order I soil survey conducted by a qualified soil scientist, finds that surface disturbance activities could occur on slopes between 20 and 40 percent while adequately protecting areas from accelerated erosion. Waiver: None
UT-S-126	NO SURFACE OCCUPANCY – NATURAL SPRINGS No surface disturbance or occupancy will be maintained around natural springs to protect the water quality of the spring. The distance would be based on geophysical, riparian, and other factors necessary to protect the water quality of the springs. If these factors cannot be determined, a 660-foot buffer zone would be maintained. Exception: An exception could be authorized if (a) there are no practical alternatives, (b) impacts could be fully mitigated, or (c) the action is designed to enhance the riparian resources. Modification: None Waiver: None
UT-S-127	NO SURFACE OCCUPANCY – INTERMITTENT AND PERENNIAL STREAMS No new surface disturbance (excluding fence lines) will be allowed in areas within the 100-year floodplain or 100 meters (330 feet) on either side from the centerline, whichever is greater, along all perennial and intermittent streams, streams with perennial reaches, and riparian areas. Exception: The authorized officer could authorize an exception if it could be shown that the project as mitigated eliminated the need for the restriction. An exception could be authorized if (a) there are no practical alternatives, (b) impacts could be fully mitigated, or (c) the action is designed to enhance the riparian resources. Modification: None Waiver: None
UT-S-160	CONTROLLED SURFACE USE – VISUAL RESOURCES - VRM II Within VRM II areas, surface disturbing activities will comply with BLM Manual Handbook 8431-1 to retain the existing character of the landscape. **Exception:** Recognized utility corridors are exempt. Temporary exceedance may be allowed during initial development phases.

	Modification: None **Waiver**: None
UT-S-169	CONTROLLED SURFACE USE – CULTURAL RESOURCE INVENTORIES Cultural resources inventories (including point, area, and linear features) will be required for all federal undertakings that could affect cultural resources or historic properties in areas of both direct and indirect impacts. Waiver of Inventory: Although complete Class III inventories will be performed for most land use actions, an authorized officer could waive inventory for any part of an Area of Potential Effect when one or more of the following conditions exist: Previous natural ground disturbance has modified the surface so extensively that the likelihood of finding cultural properties is negligible. (Note: This is not the same as being able to document that any existing sites may have been affected by surface disturbance; ground disturbance must have been so extensive as to reasonably preclude the location of any such sites.) Human activity within the last 50 years has created a new land surface to such an extent as to eradicate locatable traces of cultural properties. Existing Class II or equivalent inventory data are sufficient to indicate that the specific environmental situation did not support human occupation or use to a degree that would make further inventory information useful or meaningful. Previous inventories must have been conducted according to current professionally acceptable standards. Records are available and accurate and document the location, methods, and results of the inventory. Class II "equivalent inventory data" includes an adequate amount of acreage distributed across the same specific environmental situation that is located within the study area. Inventory at the Class III level has previously been performed, and records documenting the location, methods, and results of the inventory are available. Such inventories must have been conducted according to current professionally acceptable standards. Natural environmental characteristics (such as recent landslides or rock falls) are unfavorable to the presence of cultural properties. The nature of the Proposed Action is such that no impact can be expected on significant cultural resources. Conditions exist that could endanger the health or safety of personnel, such as the presence of hazardous materials, explosive ordnance, or unstable structures.
UT-S-176	CONTROLLED SURFACE USE – FOSSIL RESOURCES (PRECONSTRUCTION SURVEYS) Preconstruction paleo surveys will be required prior to any surface disturbing activity in the Morrison, Cedar Mountain, Blackhawk, North Horn, or Chinle Formations. Exception: The authorized officer may grant an exception if the area has previously been inventoried within the last three (3) years. Modification: None Waiver: None
UT-S-177	CONTROLLED SURFACE USE – FOSSIL RESOURCES

	A BLM permitted paleontologist will be required to be onsite during surface disturbance in any Potential Fossil Yield Classification (PFYC) 4 or 5 areas. Exceptions: None Modification: None Waiver: None
UT-S-260	TIMING LIMITATION – RAPTOR HABITAT Raptor nesting complexes and known raptor nest sites will be closed seasonally from **February 1 to July 15** within ½ mile of occupied nests. **Exception:** The authorized officer may grant an exception if the raptor nest in question is deemed to be inactive by May 31 and if the proposed activity would not result in a permanent structure or facility that would cause the subject nest to become unsuitable for nesting in future years. **Modification:** Season may be adjusted depending on climatic and range conditions. Distance may be adjusted if natural features provide adequate visual screening. **Waiver:** This stipulation may be waived if, in cooperation with the UDWR, it is determined that the site has been permanently abandoned or unoccupied for a minimum of 3 years.
UT-S-285	TIMING LIMITATION – MIGRATORY BIRD NESTING Migratory bird nesting areas will be closed seasonally from **April 15 to August 1**. Areas with migratory birds designated as BLM Special Status Species will have the highest priority. **Exception:** Upon review and monitoring, the authorized officer may grant exceptions because of climatic and/or habitat conditions if activities would not cause undue stress to migratory bird populations. **Modification:** Season may be adjusted depending on climatic and range conditions. Distance may be adjusted if natural features provide adequate visual screening. **Waiver**: None
UT-S-305	CONTROLLED SURFACE USE – NOXIOUS WEED Continue implementation of noxious weed and invasive species control actions in accordance with national guidance and local weed management plans, in cooperation with State, federal, affected counties, adjoining private land owners, and other partners or interests directly affected. Implement Standard Operating Procedures and Mitigation Measures for herbicide use as well as prevention measures for noxious and invasive plants identified in the Record of Decision Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States PEIS and associated documents. Exception: None Modification: None Waiver: None

NUMBER	LEASE NOTICES
UT-LN-21	BIGHORN SHEEP HABITAT The Lessee/Operator is given notice that the lands in this parcel contains habitat for desert bighorn sheep. Modifications to the surface use plan may be required in order to protect habitat from surface disturbing activities. These modifications may include such measures as timing restrictions to avoid surface use in bighorn sheep habitat during the crucial season (April 15 – June 15). Measure may also include avoidance of certain areas such as water sources and talus slopes.
UT-LN-25	WHITE-TAILED AND GUNNISON PRAIRIE DOG The lessee/operator is given notice that this lease parcel has been identified as containing white-tailed or Gunnison prairie dog habitat. Modifications to the Surface Use Plan of Operations may be required in order to protect white-tailed or Gunnison prairie dog from surface disturbing activities in accordance with the Endangered Species Act and 43 CFR 3101.1-2.
UT-LN-44	RAPTORS Appropriate seasonal and spatial buffers shall be placed on all known raptor nests in accordance with Utah Field Office Guidelines for Raptor Protection from Human and Land use Disturbances (USFWS 2002) and Best Management Practices for Raptors and their Associated Habitats in Utah (BLM 2006). All construction related activities will not occur within these buffers if pre-construction monitoring indicates the nests are active, unless a site-specific evaluation for active nests is completed prior to construction and if a BLM wildlife biologist, in consultation with USFWS and UDWR, recommends that activities may be permitted within the buffer. The BLM will coordinate with the USFWS and UDWR and have a recommendation within 3-5 days of notification. Any construction activities authorized within a protective (spatial and seasonal) buffer for raptors will require an on-site monitor. Any indication that activities are adversely affecting the raptor and/or its' young the on-site monitor will suspend activities and contact the BLM Authorized Officer immediately. Construction may occur within the buffers of inactive nests. Construction activities may commence once monitoring of the active nest site determines that fledglings have left the nest and are no longer dependent on the nest site. Modifications to the Surface Use Plan of Operations may be required in accordance with section 6 of the lease terms and 43CFR3101.1-2.

UT-LN-45	MIGRATORY BIRD The lessee/operator is given notice that surveys for nesting migratory birds may be required during migratory bird breeding season whenever surface disturbances and/or occupancy is proposed in association with fluid mineral exploration and development within priority habitats. Surveys should focus on identified priority bird species in Utah. Field surveys will be conducted as determined by the authorized officer of the Bureau of Land Management. Based on the result of the field survey, the authorized officer will determine appropriate buffers and timing limitations.
UT-LN-49	UTAH SENSITIVE SPECIES The lessee/operator is given notice that no surface use or otherwise disruptive activity would be allowed that would result in direct disturbance to populations or individual special status plant and animal species, including those listed on the BLM sensitive species list and the Utah sensitive species list. The lessee/operator is also given notice that lands in this parcel have been identified as containing potential habitat for species on the Utah Sensitive Species List. Modifications to the Surface Use Plan of Operations may be required in order to protect these resources from surface disturbing activities in accordance with Section 6 of the lease terms, Endangered Species Act, Migratory Bird Treaty Act and 43 CFR 3101.1-2.
UT-LN-51	SPECIAL STATUS PLANTS: NOT FEDERALLY LISTED The lessee/operator is given notice that lands in this lease have been identified as containing special status plants, not federally listed, and their habitats. Modifications to the Surface Use Plan of Operations may be required in order to protect the special status plants and/or habitat from surface disturbing activities in accordance with Section 6 of the lease terms, Endangered Species Act, and 43 CFR 3101.1-2.
UT-LN-99	Regional Ozone Formation Controls To mitigate any potential impact oil and gas development emissions may have on regional ozone formation, the following Best Management Practices (BMPs) would be required for any development projects: Tier II or better drilling rig engines Stationary internal combustion engine standard of 2g NOx/bhp-hr for engines <300HP and 1g NOx/bhp-hr for engines >300HP Low bleed or no bleed pneumatic pump valves Dehydrator VOC emission controls to +95% efficiency Tank VOC emission controls to +95% efficiency

UT-LN-102	AIR QUALITY ANALYSIS The lessee/operator is given notice that prior to project-specific approval, additional air quality analyses may be required to comply with the National Environmental Policy Act, Federal Land Policy Management Act, and/or other applicable laws and regulations. Analyses may include dispersion modeling for deposition and visibility impacts analysis, control equipment determinations, and/or emission inventory development. These analyses may result in the imposition of additional project-specific air quality control measures.
UT-LN-104	BURROWING OWL HABITAT The lessee/operator is given notice that lands in this lease have been identified as containing Burrowing Owl Habitat. Modification to the Surface Use Plan of Operations may be required in order to protect the Burrowing Owl and/or habitat from surface disturbing activities in accordance with Section 6 of the lease terms, Endangered Species Act, and 43 CFR 3101.1-2.

NUMBER	THREATENED & ENDANGERED SPECIES LEASE NOTICES
T&E-03	ENDANGERED FISH OF THE UPPER COLORADO RIVER DRAINAGE BASIN The Lessee/Operator is given notice that the lands in this parcel contain Critical Habitat for the Colorado River fish (bonytail, humpback chub, Colorado pike minnow, and razorback sucker) listed as endangered under the Endangered Species Act, or these parcels have watersheds that are tributary to designated habitat. Critical habitat was designated for the four endangered Colorado River fishes on March 21, 1994(59 FR 13374-13400). Designated critical habitat for all the endangered fishes includes those portions of the 100-year floodplain that contain primary constituent elements necessary for survival of the species. Avoidance or use restrictions may be placed on portions of the lease. The following avoidance and minimization measures have been designed to ensure activities carried out on the lease are in compliance with the Endangered Species Act. Integration of and adherence to these measures will facilitate review and analysis of any submitted permits under the authority of this lease. Following these measures could reduce the scope of Endangered Species Act, Section 7 consultation at the permit stage. Current avoidance and minimization measures include the following: Surveys will be required prior to operations unless species occupancy and distribution information is complete and available. All surveys must be conducted by qualified individual(s).

NUMBER	THREATENED & ENDANGERED SPECIES LEASE NOTICES
	Lease activities will require monitoring throughout the duration of the project. To ensure desired results are being achieved, minimization measures will be evaluated and, if necessary, Section 7 consultation reinitiated. Water production will be managed to ensure maintenance or enhancement of riparian habitat. Avoid loss or disturbance of riparian habitats. Where technically and economically feasible, use directional drilling or multiple wells from the same pad to reduce surface disturbance and eliminate drilling in suitable riparian habitat. Ensure that such directional drilling does not intercept or degrade alluvial aquifers. Conduct watershed analysis for leases in designated critical habitat and overlapping major tributaries in order to determine toxicity risk from permanent facilities. Implement Appendix B (Hydrologic Considerations for Pipeline Crossing Stream Channels, Technical Note 423). Drilling will not occur within 100 year floodplains of rivers or tributaries to rivers that contain listed fish species or critical habitat. In areas adjacent to 100-year flood plains, particularly in systems prone to flash floods, analyze the risk for flash floods to impact facilities, and use closed loop drilling, and pipeline burial or suspension according to Appendix B (Hydrologic Considerations for Pipeline Crossing Stream Channels, Technical Note 423, to minimize the potential for equipment damage and resulting leaks or spills. Water depletions from *any* portion of the Upper Colorado River drainage basin above Lake Powell are considered to adversely affect or adversely modify the critical habitat of the four resident endangered fish species, and must be evaluated with regard to the criteria described in the Upper Colorado River Endangered Fish Recovery Program. Formal consultation with USFWS is required for all depletions. All depletion amounts must be reported to BLM. Additional measures to avoid or minimize effects to the species may be developed and implemented in consultation with the U.S. Fish and Wildlife Service between the lease sale stage and lease development stage to ensure continued compliance with the ESA.
T&E-05	LISTED PLANT SPECIES The Lessee/Operator is given notice that the lands in this parcel contain suitable habitat for federally listed plant species under the Endangered Species Act. The following avoidance and minimization measures have been developed to facilitate review and analysis of any submitted permits under the authority of this lease Site inventories: Must be conducted to determine habitat suitability,

NUMBER	THREATENED & ENDANGERED SPECIES LEASE NOTICES
	Are required in known or potential habitat for all areas proposed for surface disturbance prior to initiation of project activities, at a time when the plant can be detected, and during appropriate flowering periods, Documentation should include, but not be limited to individual plant locations and suitable habitat distributions, and All surveys must be conducted by qualified individuals. Lease activities will require monitoring throughout the duration of the project. To ensure desired results are being achieved, minimization measures will be evaluated and, if necessary, Section 7 consultation reinitiated. Project activities must be designed to avoid direct disturbance to populations and to individual plants: Designs will avoid concentrating water flows or sediments into plant occupied habitat. Construction will occur down slope of plants and populations where feasible; if well pads and roads must be sited upslope, buffers of 300 feet minimum between surface disturbances and plants and populations will be incorporated. Where populations occur within 300 ft. of well pads, establish a buffer or fence the individuals or groups of individuals during and post-construction. Areas for avoidance will be visually identifiable in the field, e.g., flagging, temporary fencing, rebar, etc. For surface pipelines, use a 10 foot buffer from any plant locations: If on a slope, use stabilizing construction techniques to ensure the pipelines don't move towards the population. For riparian/wetland-associated species, e.g. Ute ladies-tresses, avoid loss or disturbance of riparian habitats. Ensure that water extraction or disposal practices do not result in change of hydrologic regime. Limit disturbances to and within suitable habitat by staying on designated routes. Limit new access routes created by the project. Place signing to limit ATV travel in sensitive areas. Implement dust abatement practices near occupied plant habitat. All disturbed areas will be re-vegetated with native species comprised of species indigenous to the area. Post construction monitoring for invasive species will be required.

NUMBER	THREATENED & ENDANGERED SPECIES LEASE NOTICES
	Where technically and economically feasible, use directional drilling or multiple wells from the same pad to reduce surface disturbance and eliminate drilling in plant habitat. Ensure that such directional drilling does not intercept or degrade alluvial aquifers. Lease activities will require monitoring throughout the duration of the project. To ensure desired results are being achieved, minimization measures will be evaluated and, if necessary, Section 7 consultation reinitiated. Additional measures to avoid or minimize effects to the species may be developed and implemented in consultation with the U.S. Fish and Wildlife Service between the lease sale stage and lease development stage to ensure continued compliance with the Endangered Species Act.
T&E-15	WRIGHT FISHHOOK CACTUS (*SCLEROCACTUS WRIGHTIAE*) In order to minimize effects to the federally threatened Wright Fishhook Cactus, the Bureau of Land Management (BLM), in coordination with the U.S. Fish and Wildlife Service (Service), has developed the following avoidance and minimization measures. Implementation of these measures will help ensure the activities carried out during oil and gas development (including but not limited to drilling, production, and maintenance operations) are in compliance with the endangered Species Act (ESA). For the purposes of this document, the following terms are so defined: *Potential habitat* is defined as areas which satisfy the broad criteria of the species habitat description; usually determined by preliminary, in-house assessment. *Suitable habitat* is defined as areas which contain or exhibit the specific components or constituents necessary for plant persistence; determined by field inspection and/or surveys; may or may not contain Wright Fishhook Cactus; habitat descriptions can be found in Federal Register Notice and species recovery plan links at <http:www.fws.gov/endangered/wildlife.html>. *Occupied habitat* is defined as areas currently or historically known to support Wright Fishhook Cactus; synonymous with "known habitat." The following avoidance and minimization measures should be included in the Plan of Development: Pre-project habitat assessments will be completed across 100% of the project disturbance area within potential habitat[1] prior to any ground disturbing activities (including ATV use) to determine if suitable Wright Fishhook Cactus habitat is present. Site inventories will be conducted within suitable habitat to determine occupancy. Where standard surveys are technically infeasible and otherwise hazardous due to topography, slope, etc. suitable habitat will be assessed and mapped for avoidance (hereafter, "avoidance areas"); in such cases, in general, 300' buffers will be maintained between surface disturbance and avoidance areas. However, site specific distances will need to be approved by FWS and BLM when disturbance will occur upslope of habitat. Where conditions allow, inventories: Must be conducted by qualified individuals(s) and according to BLM and Service accept survey protocols,

NUMBER	THREATENED & ENDANGERED SPECIES LEASE NOTICES
	Will be conducted in suitable and occupied habitat for all areas proposed for surface disturbance prior to initiation of project activities and within the same growing season, at a time when the plant can be detected (usually April 15th to June 5th, however, surveyors should verify that the plant is flowering by contacting a BLM or FWS botanist or demonstrating that the nearest known population is in flower), Will occur within 300' from the centerline of the proposed right-of-way for surface pipelines or roads; and within 300' from the perimeter of disturbance for the proposed well pad including the well pad, Will include, but not be limited to, plant species lists and habitat characteristics, and Will be valid until April 15th the following year. Design project infrastructure to minimize impacts within suitable habitat: Where standard surveys are technically infeasible, infrastructure and activities will avoid all suitable habitat (voidance areas) and incorporate 300' buffers, in general; however, site specific distances will need to be approved by FWS and BLM when disturbance will occur upslope of habitat, Reduce well pad size to the minimum needed, without compromising safety, Where technically and economically feasible, use directional drilling or multiple wells from the samepad, Limit new access routes created by the project, Roads and utilities should share common right-of-ways where possible, Reduce the width of right-of-ways and minimize the depth of excavation needed for the road bed; where feasible, use the natural ground surface for the road within habitat, Place signing to limit off-road travel in sensitive areas, and Stay on designated routes and other cleared/approved areas, All disturbed areas will be revegetated with native species comprised of species indigenous to the area and non-native species that are not likely to invade other areas. Within occupied habitat, project infrastructure will be designed to avoid direct disturbance and minimize indirect impacts to populations and to individual plants: Follow the above recommendations (#3) for project design within suitable habitats,

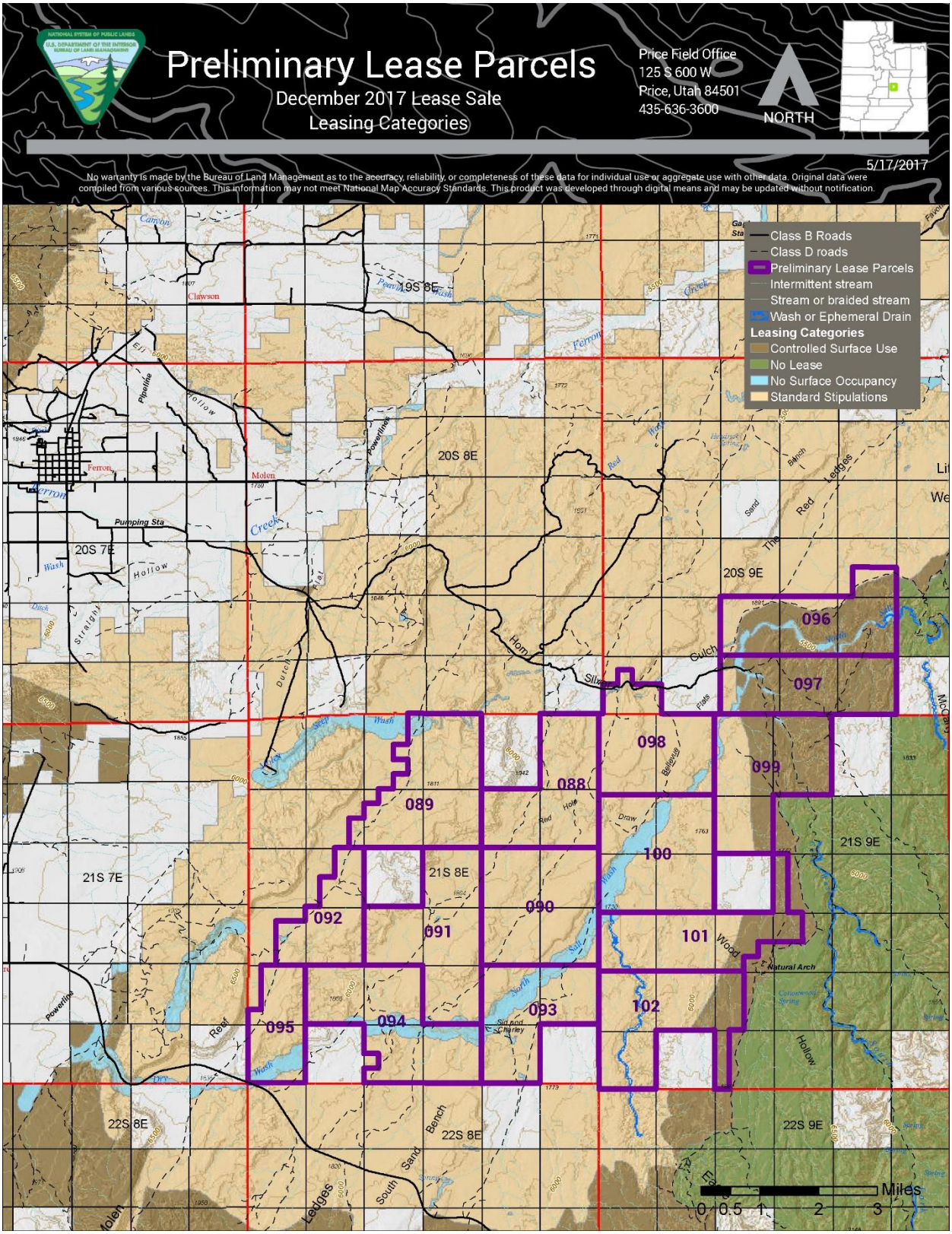
NUMBER	THREATENED & ENDANGERED SPECIES LEASE NOTICES
	To avoid water flow and/or sedimentation into occupied habitat and avoidance areas, silt fences, hay bales, and similar structures or practices will be incorporated into the project design; appropriate placement of fill is encouraged, Construction of roads will occur such that the edge of the right of way is at least 300' from any plant and 300' from avoidance areas, Roads will be graveled with occupied habitat; the operator is encouraged to apply water for dust abatement to such areas from April 15th to June 5th (flowering period); dust abatement applications will be comprised of water only, The edge of the well pad should be located at least 300' away from plants and avoidance areas, in general; however, site specific distances will need to be approved by FWS and BLM when disturbance will occur upslope of habitat, Surface pipelines will be laid such that a 300' buffer exists between the edge of the right of way and plants and 300' between the edge of right of way and avoidance areas; use stabilizing and anchoring techniques when the pipeline crossed suitable habitat to ensure pipelines don't move towards the population; site specific distances will need to be approved by FWS and BLM when disturbance will occur upslope of habitat, Construction activities will not occur from April 15th through June 5th within occupied habitat, Before and during construction, areas for avoidance should be visually identifiable in the field, e.g., flagging temporary fencing, rebar, etc., Place produced oil, water, or condensate tanks in centralized locations, away from occupied habitat, and Minimize the disturbed area of producing well locations through interim and final reclamation. Reclaim well pads following drilling to the smallest area possible. Occupied Wright Fishhook Cactus habitats within 300' of the edge of the surface pipelines' right-of-ways, 300' of the edge of the roads' right-of-ways, and 300' from the edge of the well pad shall be monitored for a period of three years after ground disturbing activities. Monitoring will include annual plant surveys to determine plant and habitat impacts relative to project facilities. Annual reports shall be provided to the BLM and the Service. To ensure desired results are being achieved, minimization measures will be evaluated and may be changed after a thorough review of the monitoring results and annual reports during annual meetings between the BLM and the Service. Re-initiation of section 7 consultation with the Service will be sought immediately if any loss of plants or occupied habitat for the Wright Fishhook Cactus is anticipated as a result of project activities. Additional site-specific measures may also be employed to avoid or minimize effects to the species. These additional measures will be developed and implemented in consultation

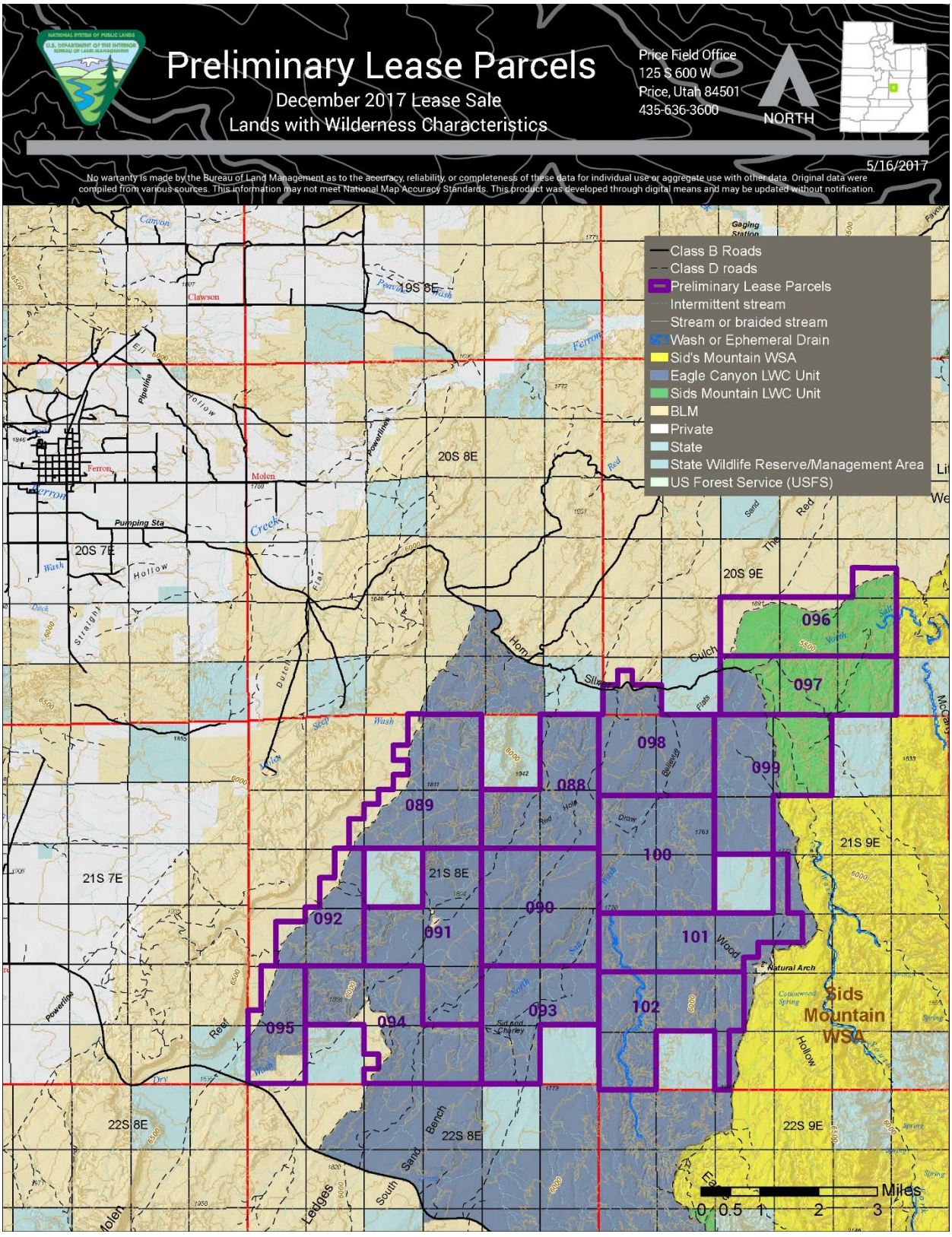
NUMBER	THREATENED & ENDANGERED SPECIES LEASE NOTICES
	with the U.S. Fish and Wildlife Service to ensure continued compliance with the ESA.
T&E-17	SAN RAFAEL CACTUS (*PEDIOCACTUS DESPAINII*) In order to minimize effects to the federally threatened San Rafael Cactus, the Bureau of Land Management (BLM), in coordination with the U.S. Fish and Wildlife Service (Service), has developed the following avoidance and minimization measures. Implementation of these measures will help ensure the activities carried out during oil and gas development (including but not limited to drilling, production, and maintenance operations) are in compliance with the endangered Species Act (ESA). For the purposes of this document, the following terms are so defined: *Potential habitat* is defined as areas which satisfy the broad criteria of the species habitat description; usually determined by preliminary, in-house assessment. *Suitable habitat* is defined as areas which contain or exhibit the specific components or constituents necessary for plant persistence; determined by field inspection and/or surveys; may or may not contain San Rafael Cactus; habitat descriptions can be found in Federal Register Notice and species recovery plan links at <http:www.fws.gov/endangered/wildlife.html>. *Occupied habitat* is defined as areas currently or historically known to support San Rafael Cactus; synonymous with "known habitat." The following avoidance and minimization measures should be included in the Plan of Development: Pre-project habitat assessments will be completed across 100% of the project disturbance area within potential habitat[1] prior to any ground disturbing activities (including ATV use) to determine if suitable San Rafael Cactus habitat is present. Site inventories will be conducted within suitable habitat to determine occupancy. Where standard surveys are technically infeasible and otherwise hazardous due to topography, slope, etc. suitable habitat will be assessed and mapped for avoidance (hereafter, "avoidance areas"); in such cases, in general, 300' buffers will be maintained between surface disturbance and avoidance areas. However, site specific distances will need to be approved by FWS and BLM when disturbance will occur upslope of habitat. Where conditions allow, inventories: Must be conducted by qualified individuals(s) and according to BLM and Service accept survey protocols, Will be conducted in suitable and occupied habitat for all areas proposed for surface disturbance prior to initiation of project activities and within the same growing season, at a time when the plant can be detected (usually April 15th to June 5th, however, surveyors should verify that the plant is flowering by contacting a BLM or FWS botanist or demonstrating that the nearest known population is in flower), Will occur within 300' from the centerline of the proposed right-of-way for surface pipelines or roads; and within 300' from the perimeter of disturbance for the proposed well pad including the well pad,

NUMBER	THREATENED & ENDANGERED SPECIES LEASE NOTICES
	Will include, but not be limited to, plant species lists and habitat characteristics, and Will be valid until April 15th the following year. Design project infrastructure to minimize impacts within suitable habitat: Where standard surveys are technically infeasible, infrastructure and activities will avoid all suitable habitat (voidance areas) and incorporate 300' buffers, in general; however, site specific distances will need to be approved by FWS and BLM when disturbance will occur upslope of habitat, Reduce well pad size to the minimum needed, without compromising safety, Where technically and economically feasible, use directional drilling or multiple wells from the same pad, Limit new access routes created by the project, Roads and utilities should share common right-of-ways where possible, Reduce the width of right-of-ways and minimize the depth of excavation needed for the road bed; where feasible, use the natural ground surface for the road within habitat, Place signing to limit off-road travel in sensitive areas, and Stay on designated routes and other cleared/approved areas, All disturbed areas will be re-vegetated with native species comprised of species indigenous to the area and non-native species that are not likely to invade other areas. Within occupied habitat, project infrastructure will be designed to avoid direct disturbance and minimize indirect impacts to populations and to individual plants: Follow the above recommendations (#3) for project design within suitable habitats, To avoid water flow and/or sedimentation into occupied habitat and avoidance areas, silt fences, hay bales, and similar structures or practices will be incorporated into the project design; appropriate placement of fill is encouraged, Construction of roads will occur such that the edge of the right of way is at least 300' from any plant and 300' from avoidance areas, Roads will be graveled with occupied habitat; the operator is encouraged to apply water for dust abatement to such areas from April 15th to June 5th (flowering period); dust abatement applications will be comprised of water only,

NUMBER	THREATENED & ENDANGERED SPECIES LEASE NOTICES
	The edge of the well pad should be located at least 300' away from plants and avoidance areas, in general; however, site specific distances will need to be approved by FWS and BLM when disturbance will occur upslope of habitat, Surface pipelines will be laid such that a 300' buffer exists between the edge of the right of way and plants and 300' between the edge of right of way and avoidance areas; use stabilizing and anchoring techniques when the pipeline crossed suitable habitat to ensure pipelines don't move towards the population; site specific distances will need to be approved by FWS and BLM when disturbance will occur upslope of habitat, Construction activities will not occur from April 15th through June 5th within occupied habitat, Before and during construction, areas for avoidance should be visually identifiable in the field, e.g., flagging temporary fencing, rebar, etc., Place produced oil, water, or condensate tanks in centralized locations, away from occupied habitat, and Minimize the disturbed area of producing well locations through interim and final reclamation. Reclaim well pads following drilling to the smallest area possible. Occupied San Rafael Cactus habitats within 300' of the edge of the surface pipelines' right-of-ways, 300' of the edge of the roads' right-of-ways, and 300' from the edge of the well pad shall be monitored for a period of three years after ground disturbing activities. Monitoring will include annual plant surveys to determine plant and habitat impacts relative to project facilities. Annual reports shall be provided to the BLM and the Service. To ensure desired results are being achieved, minimization measures will be evaluated and may be changed after a thorough review of the monitoring results and annual reports during annual meetings between the BLM and the Service. Re-initiation of section 7 consultation with the Service will be sought immediately if any loss of plants or occupied habitat for the San Rafael Cactus is anticipated as a result of project activities. Additional site-specific measures may also be employed to avoid or minimize effects to the species. These additional measures will be developed and implemented in consultation with the U.S. Fish and Wildlife Service to ensure continued compliance with the ESA.

Appendix D – Maps




Preliminary Lease Parcels
December 2017 Lease Sale
Lands with Wilderness Characteristics
Price Field Office
125 S 600 W
Price, Utah 84501
435-636-3600
NORTH
5/16/2017
No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.
Class B Roads
Class D roads
Preliminary Lease Parcels
Intermittent stream
Stream or braided stream
Wash or Ephemeral Drain
Sid's Mountain WSA
Eagle Canyon LWC Unit
Sids Mountain LWC Unit
BLM
Private
State
State Wildlife Reserve/Management Area
US Forest Service (USFS)
19S 8E
20S 8E
20S 7E
20S 9E
21S 7E
21S 8E
21S 9E
22S 8E
22S 9E
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Sids Mountain WSA
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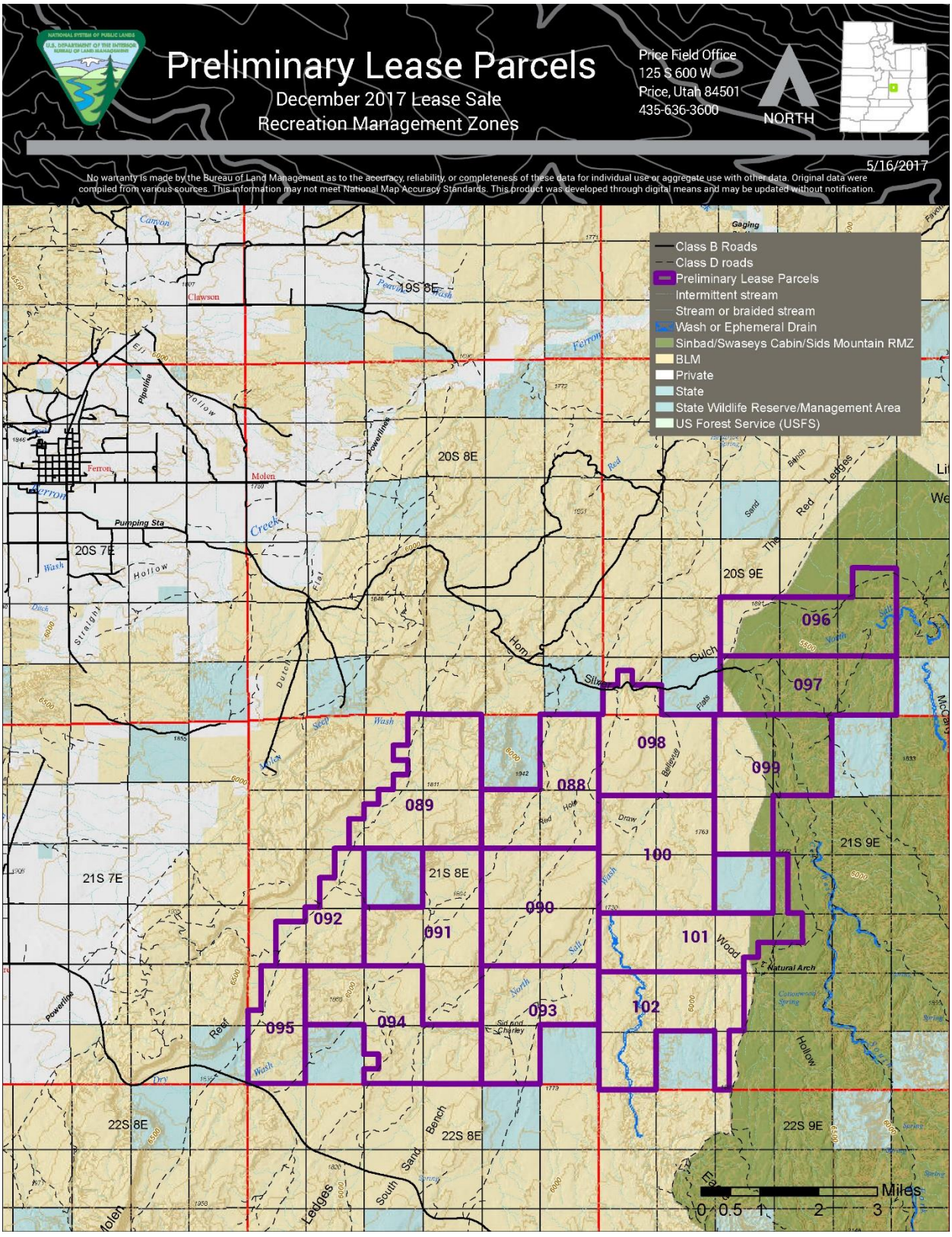
Preliminary Lease Parcels
December 2017 Lease Sale
Recreation Management Zones
Price Field Office
125 S 600 W
Price, Utah 84501
435-636-3600
NORTH
5/16/2017
No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.
Class B Roads
Class D roads
Preliminary Lease Parcels
Intermittent stream
Stream or braided stream
Wash or Ephemeral Drain
Sinbad/Swaseys Cabin/Sids Mountain RMZ
BLM
Private
State
State Wildlife Reserve/Management Area
US Forest Service (USFS)
19S 8E
20S 8E
20S 7E
20S 9E
21S 7E
21S 8E
21S 9E
22S 8E
22S 9E
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Ferron
Molen
Clawson
Natural Arch
Miles
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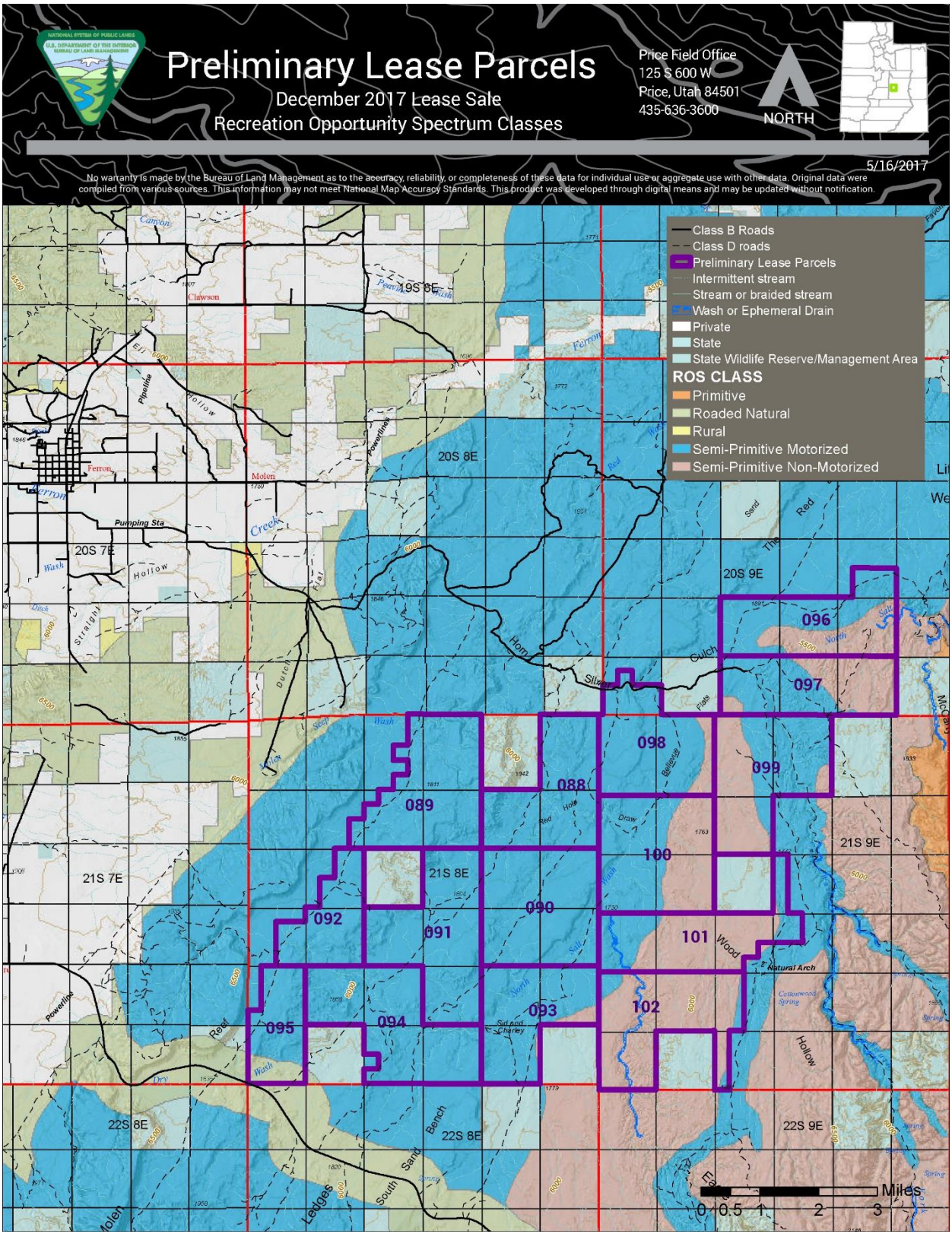
Preliminary Lease Parcels
December 2017 Lease Sale
Recreation Opportunity Spectrum Classes
Price Field Office
125 S 600 W
Price, Utah 84501
435-636-3600
NORTH
5/16/2017
No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.
Class B Roads
Class D roads
Preliminary Lease Parcels
Intermittent stream
Stream or braided stream
Wash or Ephemeral Drain
Private
State
State Wildlife Reserve/Management Area
ROS CLASS
Primitive
Roaded Natural
Rural
Semi-Primitive Motorized
Semi-Primitive Non-Motorized
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20S 8E
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20S 9E
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Ferron
Molen
Clawson
Natural Arch
Miles
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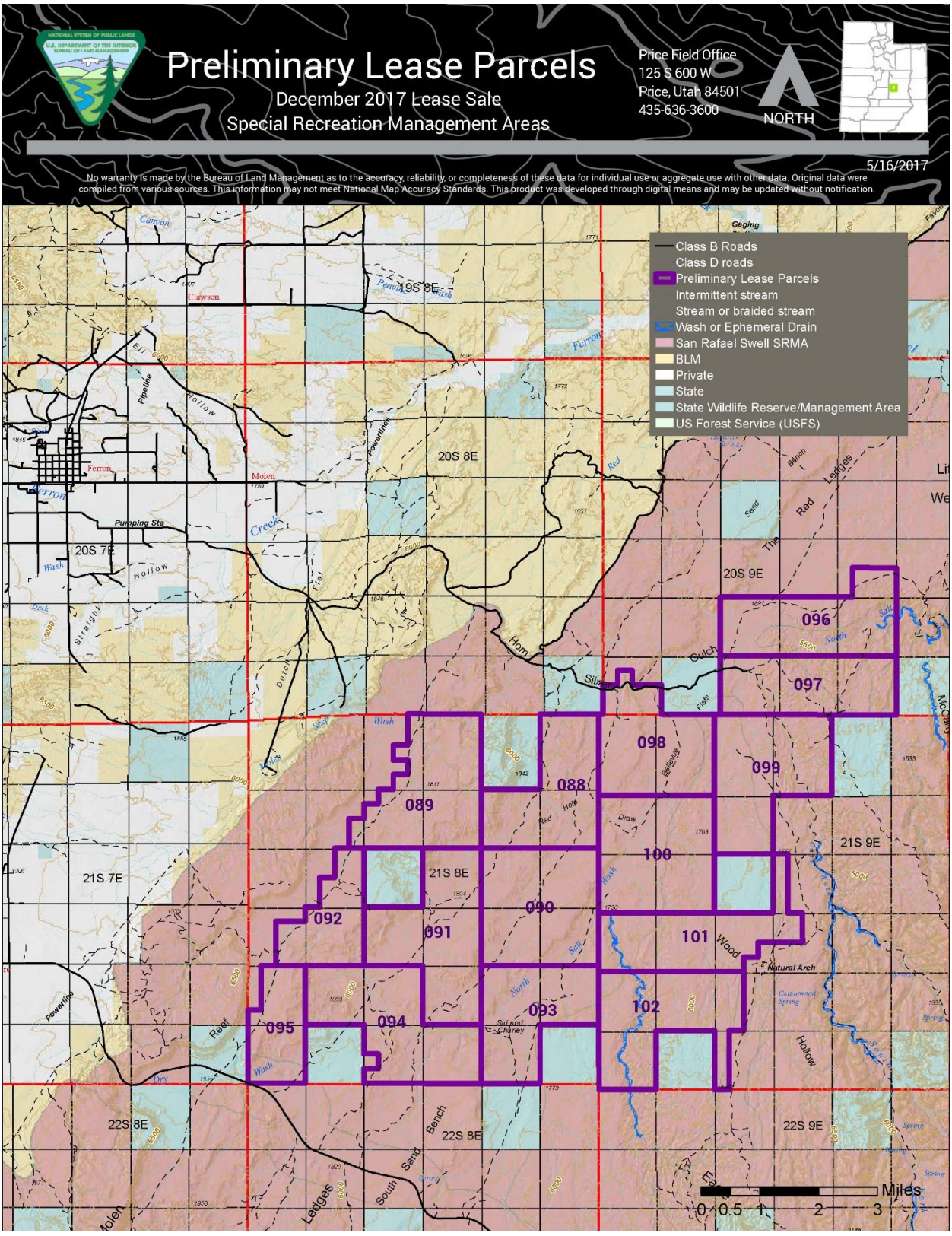
Preliminary Lease Parcels
December 2017 Lease Sale
Special Recreation Management Areas
Price Field Office
125 S 600 W
Price, Utah 84501
435-636-3600
NORTH
5/16/2017
No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.
Class B Roads
Class D roads
Preliminary Lease Parcels
Intermittent stream
Stream or braided stream
Wash or Ephemeral Drain
San Rafael Swell SRMA
BLM
Private
State
State Wildlife Reserve/Management Area
US Forest Service (USFS)
088
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20S 8E
20S 7E
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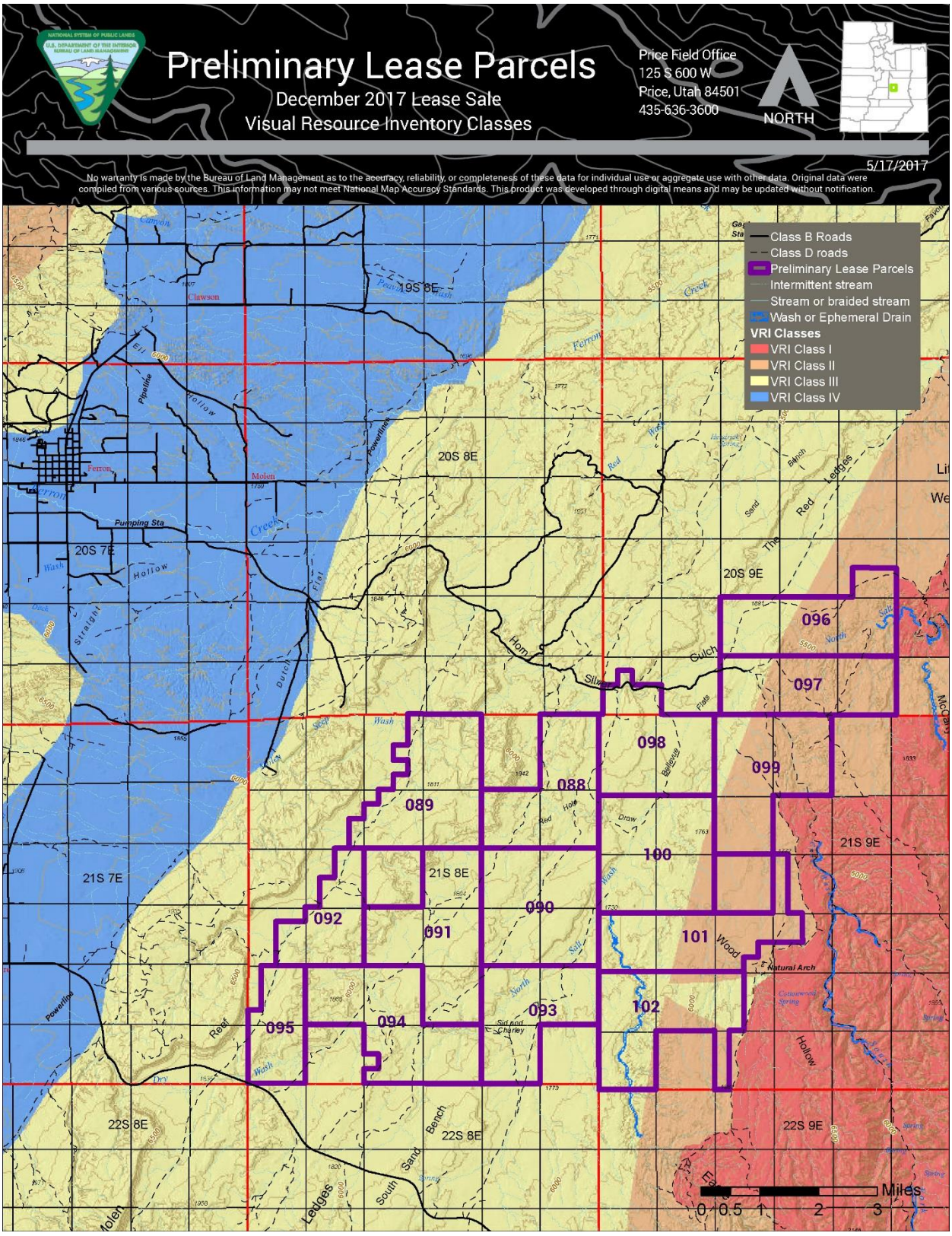
Preliminary Lease Parcels
December 2017 Lease Sale
Visual Resource Inventory Classes
Price Field Office
125 S 600 W
Price, Utah 84501
435-636-3600
NORTH
5/17/2017
No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.
Class B Roads
Class D roads
Preliminary Lease Parcels
Intermittent stream
Stream or braided stream
Wash or Ephemeral Drain
VRI Classes
VRI Class I
VRI Class II
VRI Class III
VRI Class IV
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Miles
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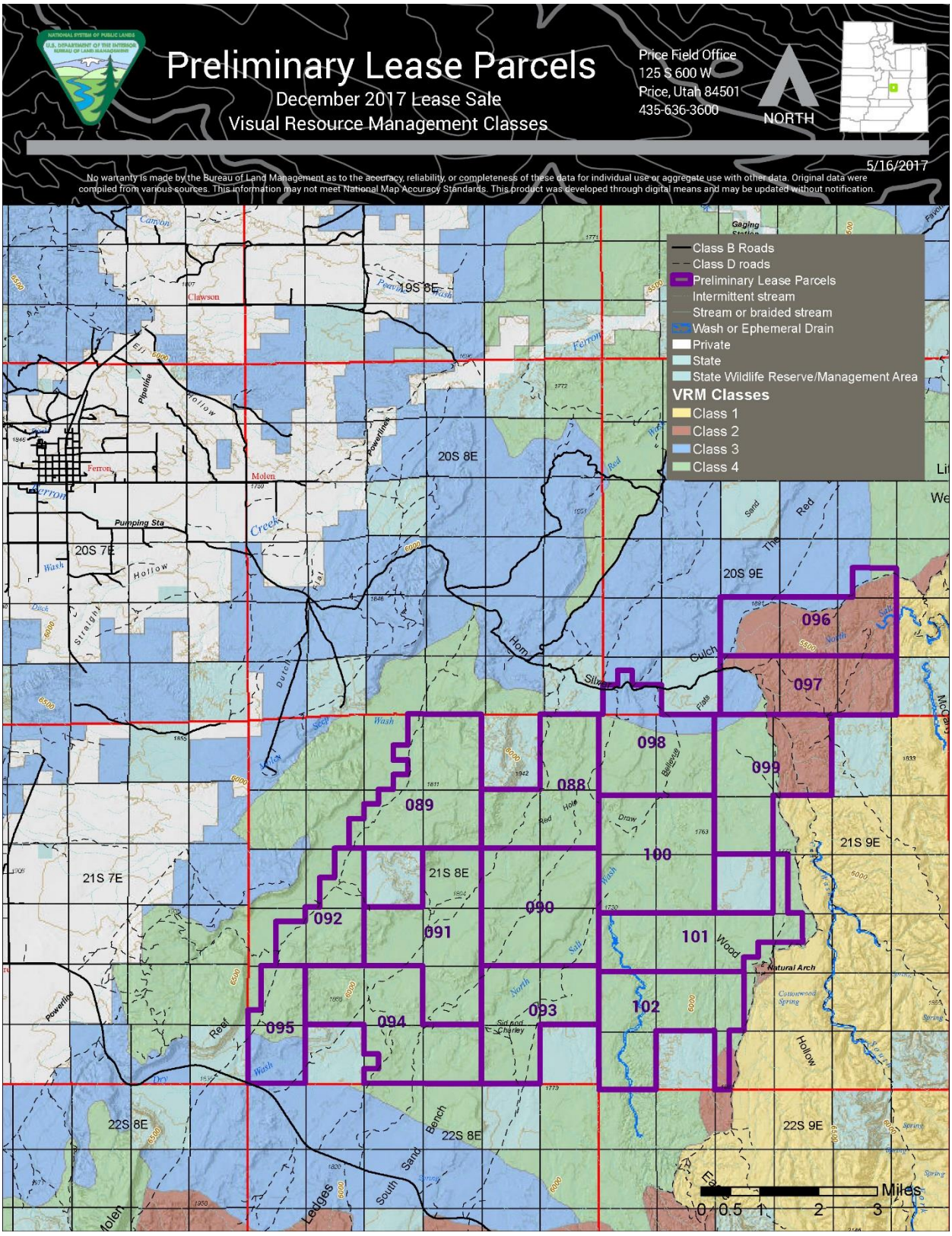
Preliminary Lease Parcels
December 2017 Lease Sale
Visual Resource Management Classes
Price Field Office
125 S 600 W
Price, Utah 84501
435-636-3600
NORTH
5/16/2017
No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.
Class B Roads
Class D roads
Preliminary Lease Parcels
Intermittent stream
Stream or braided stream
Wash or Ephemeral Drain
Private
State
State Wildlife Reserve/Management Area
VRM Classes
Class 1
Class 2
Class 3
Class 4
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101
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093
102
19S 8E
20S 8E
20S 7E
20S 9E
21S 7E
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Ferron
Clawson
Molen
Pumping Sta
Natural Arch
Miles
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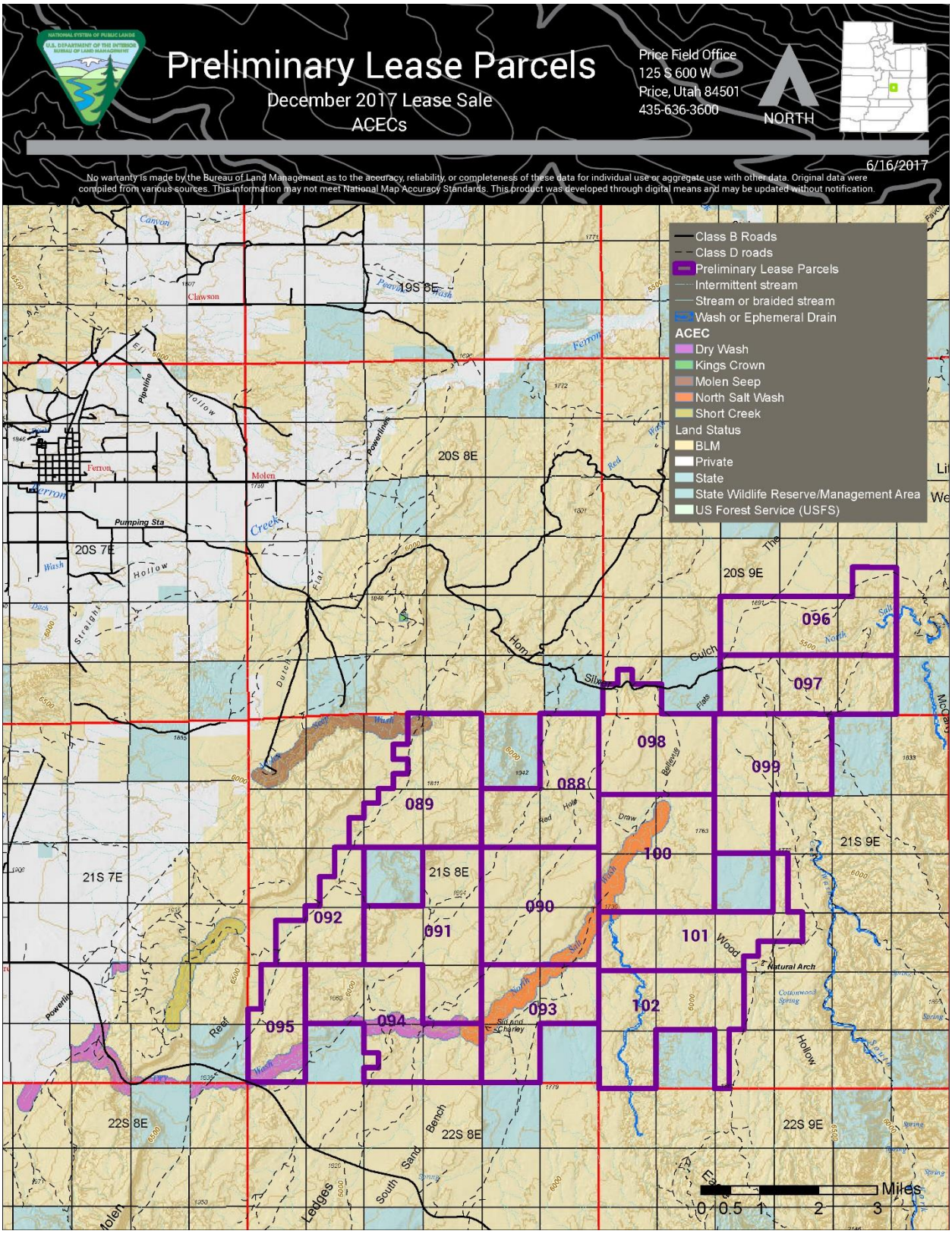
Preliminary Lease Parcels
December 2017 Lease Sale
ACECs
Price Field Office
125 S 600 W
Price, Utah 84501
435-636-3600
NORTH
6/16/2017
No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.
Class B Roads
Class D roads
Preliminary Lease Parcels
Intermittent stream
Stream or braided stream
Wash or Ephemeral Drain
ACEC
Dry Wash
Kings Crown
Molen Seep
North Salt Wash
Short Creek
Land Status
BLM
Private
State
State Wildlife Reserve/Management Area
US Forest Service (USFS)
088
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098
099
100
101
102
19S 8E
20S 8E
20S 7E
20S 9E
21S 7E
21S 8E
21S 9E
22S 8E
22S 9E
Ferron
Molen
Clawson
Natural Arch
Miles
0 0.5 1 2 3

Appendix E – Response to Public Comments

Reserved

Appendix F – Interdisciplinary Team Checklist

Project Title: December 2017 Competitive Oil and Gas Lease Sale

NEPA Log Number: DOI-BLM-UT-G021-2017-0030-EA

Project Lead: Don Stephens

Determinations:

NP = not present in the area impacted by the proposed or alternative actions

NI = present, but not affected to a degree that detailed analysis is required

PI = present with potential for significant impact analyzed in detail in the EA; or identified in a DNA as requiring further analysis

Determination	Resource	Rationale for Determination	Signature	Date
RESOURCES AND ISSUES CONSIDERED (INCLUDES SUPPLEMENTAL AUTHORITIES APPENDIX 1 H-1790-1)				
PI	Air Quality	Leasing itself would not have impacts to air quality. However, should development occur on the leases, emissions from earth-moving equipment, vehicle traffic, drilling and completion activities, separators, oil storage tanks, dehydration units, and daily tailpipe and fugitive dust emissions could occur. Application of stipulation UT-S-01 (Air Quality) and lease notices UT-LN-99 (Regional Ozone Formation Controls), UT-LN-102 (Air Quality Analysis) is warranted.	Stephanie Howard	5/23/2017
PI	Greenhouse Gas Emissions / Climate Change	Leasing the subject parcels would have no GHG emissions and would not impact climate. However, should exploration or development occur on the leases, GHG emissions could occur from construction, drilling, and production equipment and end use of the product.	Stephanie Howard	5/23/2017

Determination	Resource	Rationale for Determination	Signature	Date
PI	Areas of Critical Environmental Concern (ACECs)	• Parcel #089 contains a portion of the Molen Seep ACEC • Parcels #094, #091, #093, #090, #101, and #100 contain portions of the North Salt Wash ACEC • Parcels #095, #094, and #091 contain portions of the Dry Wash ACEC The remaining parcels contain no portion of any ACEC. The ACECs are part of the greater Rock Art ACEC, which was designated for the relevant and important cultural values. Even with a NSO designation as stipulated in the PFO 2008 RMP, there is potential that development may cause indirect or cumulative effects, which may impact the resource values.	Nicole Lohman	5/11/17
PI	Cultural Resources	Existing surveys, documented cultural resources, and undocumented cultural resources reported to the BLM by private citizens indicate the presence of significant and potentially significant cultural resources within the lease sale area. Cultural resources within the lease sale area include prehistoric artifact scatters, petroglyphs, pictographs, prehistoric structures, lithic quarries, historic inscriptions, and a historic corral. Two larger surveys projects included randomly placed survey blocks throughout the lease area. These surveys indicated that cultural resources generally occur in areas with Ferron sandstone outcrops and at the interface of alluvium and sandstone outcrops. Professional judgement is that cultural resources can be expected to occur in higher concentrations in the western portion of the proposed lease area and in lower concentrations in the eastern portion where outcrops of Ferron sandstone consist of cobbles and cliff faces are less common. After consideration of cultural resource information and other general data including: the applicable Price Field Office Resource Management	Nicole Lohman	3/6/2017

Determination	Resource	Rationale for Determination	Signature	Date
		Plan (RMP) and associated Environmental Impact Statement (EIS); oil and gas activity NEPA documents; information from Consulting parties, specific data relating to the individual proposed parcels such as topography and soils; as well as personal knowledge and experience of the lands at issue we proposed that reasonable development of one 7.9 acre well pad development within each parcel could occur within each parcel, but there is a potential for cumulative and indirect impacts. The BLM will not approve any ground disturbing activities that may affect such properties or resources until it completes its obligations under applicable requirements of the NHPA and other authorities. The BLM may require modification to exploration or development proposals to protect properties, or disapprove any activity that is likely to result in adverse effects that cannot be successfully avoided, minimized or mitigated. Application of stipulationsUT-S-169 (cultural resources inventory) and lease notice UT-LN-68 (Notification and Consultation Regarding Cultural Resources) is warranted for all parcels. Parcels 89, 90,91 93,94,95,100, and 101 contain portions of the larger Rock Art ACEC and are subject to NSO leasing constraints (UT-S-10).		
NI	Environmental Justice	The ethnic composition and economic situation of residents of Carbon and Emery Counties indicate that no minority or low-income populations are experiencing disproportionately high or adverse effects from current management actions (RMP EIS). Leasing would not adversely or disproportionately affect minority, low income or disadvantaged groups.	Jacob Palma	5/8/17
NP	Farmlands (Prime or Unique)	According to the NRCS soils surveys and knowledge of the soils, there are no prime and unique soils mapped within the project area.	Jeffrey Brower	3/3/17

Determination	Resource	Rationale for Determination	Signature	Date
NP	Floodplains	After review of USGS 7.5 min. maps of the project areas, no floodplain as defined by EO 11988, FEMA, or Corps of Engineers is found on or near the project area.	Jeffrey Brower	3/3/17
NI	Invasive, Non-native Species (EO 13112)	Stipulation UT-S-305 is attached to all parcels (Noxious Weeds). Noxious weeds are present within all the parcels. Salt Cedar & Russian olive (County listed noxious weed) are present within all parcels. Halogeton, Russian thistle, burdock and cheatgrass are invasive species that occurs within all the parcels. Leasing will not have an impact to invasive species/noxious weeds at this time because no ground disturbance will occur. If development of the leased parcels occur then site specific analysis needs to be completed prior to ground disturbance.	Stephanie Bauer	3/9/17
NI	Native American Religious Concerns	Letters containing notification of this lease sale, location maps and legal descriptions of the offered parcels were sent to the Paiute Tribe of Utah (PITU), Ute Indian Tribe, Hopi Tribe, Navaho Nation, Southern Ute Indian Tribe, Kaibab Band of Paiute Indians of the Paiute Reservation, Northwest Band of Shoshone, Fallon Paiute-Shoshone Tribes, San Juan Southern Paiute, Shoshone-Bannock Tribes, Pueblo of Jemez, Ute Mountain Ute Tribe, and Eastern Shoshone Tribe on 3/7/2017. The letters detailed the leasing proposal and requested comments. The Hopi Tribe responded to the letter sent March 7, 2017 in a letter dated March 23, 2017. They noted concerns about rock art and potential for indirect and cumulative effects. The BLM did not receive this initial response, until much later when it was included as an attachment to a May 1, 2017 letter. The Hopi disagreed with preliminary finding of "no adverse effect". The Hopi Tribe sent an additional letter dated May 1, 2017 to BLM. In the May 1, 2017 letter the Hopi requested deferral of all parcels within the proposed lease sale due to cultural resource concerns until additional cultural resource survey is conducted. BLM called Hopi on May	Nicole Lohman	3/6/17; 5/8/2017

Determination	Resource	Rationale for Determination	Signature	Date
		1, 2017 to suggest a face to face meeting. A meeting time was not agreed to during the May 1, 2017 call. The BLM reached out to the Hopi again on June 9, 2017 to discuss a potential meeting. The Hopi failed to respond to the request. The Price BLM archaeologist met with the Uintah-Ouray tribe on May 17, 2017 to discuss any potential concerns with the leasing of the proposed parcels. The tribal representative present stated no concerns with leasing in the area but recommended deferring any areas where burials and rock art occur together. No other tribes responded to the initial request and no information was provided on areas of traditional or religious concern located within the proposed parcels.		
NI	Plants: Threatened, Endangered or Candidate Plant Species	A resource list from IPaC was reviewed for potential species in the area. Each species was evaluated in detail. Refer to the Wildlife and Botany resources report June 2017.After review of BLM records and site visits, there are known populations or potential habitat within the proposed leased parcels. The following lease notices apply to all parcels (refer to Appendix C for details on the lease notices). T&E-05: Listed Plant Species T&E-15: Wright Fishhook Cactus (*Sclerocactus wrightiae*) T&E-17: San Rafael Cactus (*Pediocactus despainii*) The effects of the oil and gas leasing actions and the lease notices on the Federally listed and candidate species was analyzed in detail in the 2008 PFO RMP and the associated Biological Opinion; therefore, no additional analysis is required for this EA. At the APD stage, implementing management recommendations in species recovery, conservation plans, or	Dana Truman	06/14/17

Determination	Resource	Rationale for Determination	Signature	Date
		alternative management strategies developed in consultation with USFWS would provide direct protection and enhancement for federally listed, proposed, or candidate species.		
PI	Plants: BLM sensitive	Based on a review of BLM 2011 IM Sensitive species list, BLM records and site visits, there are known populations for special status species Creutzfeldt cryptantha (*Cryptantha creutzfeldtii*) and Psoralea globemallow (*Sphaeralcea psoraloides)* within the proposed leased parcels. Potential habitat for other BLM sensitive species also occurs within lease parcels, but there are no known populations. Each species was evaluated in detail. Refer to the Wildlife and Botany resources report June 2017. UT-LN-51 (special status species) is applied to all parcels. The effects from Oil and Gas leasing were analyzed in the 2008 PFO RMP. At the APD stage site specific conditions of approval may be added to reduce or eliminate impacts to BLM sensitive species.	Dana Truman	05/12/17
NI	Wastes (hazardous or solid)	No chemicals subject to reporting under SARA Title III will be used, produced, stored, transported, or disposed of annually in association with the project. Furthermore, no extremely hazardous substances, as defined in 40 CFR 355, in threshold planning quantities, will be used, produced, stored, transported, or disposed of in association with the project. Trash would be confined in a covered container and disposed of in an approved landfill. No burning of any waste will occur due to this project. Human waste will be disposed of in an appropriate manner in an approved sewage treatment center.	Jeffrey Brower	3/3/17

Determination	Resource	Rationale for Determination	Signature	Date
NI	Water Quality (drinking / ground)	The lease parcels do not occur within any Sole Source Aquifers or Drinking Water Source Protection Zones (DWSPZs). Compliance with IM UT 2010-055 would be completed prior to APD approval. Maintenance and refueling of equipment could impact water quality. However, standard protocols would minimize possibility of releases. Drill holes will be cased to an elevation below 4000 feet or when groundwater is encountered. No surface disturbance or occupancy would be maintained within 660 feet of any natural springs to protect the water quality of the spring. No new disturbance will be allowed in areas equal to the 100 year floodplain or 100 meters on either side of the center line of any stream, stream reach, or riparian area. At the time of development, drilling operators will conform to the provisions of the operational regulations and Onshore Oil & Gas Order Number 2, which requires the protection and isolation of all useable quality waters. High Country Watershed areas would be closed seasonally from December 1 to April 15 to surface disturbing activity at elevations above 7,000 feet. Lease Stipulations UT-S-126 and UT-S-127 are attached to all parcels containing natural springs, and floodplains, riparian areas, springs and public water reserves. <u>Parcels with stipulations</u>: 097, 098, 099, 100, 101, 102: Avoidance of springs and riparian; UT-S-126 088, 089, 090, 091, 092, 093, 094, 095, 096, 097, 098, 099, 100, 101, 102: Avoidance of streams; UT-S-127	Jeffrey Brower	03/27/17

Determination	Resource	Rationale for Determination	Signature	Date
		The underground injection of 'fracking waste water' in Utah presents little potential for inducing seismic activity. The majority of fracking waste 'fluids' are recycled and reused for future frack jobs. There have been no reported earthquakes in Utah that were suspected of being produced (induced) from injecting fluids into oil and gas disposal wells. (Personal communication from Brad Rogers, Utah Division of Oil, Gas and Mining ("UDOGM"), August 10, 2015). This fluid is predominantly produced water with a high salt brine content. As stated above in order to analyze and predict the potential for earthquakes associated with oil and gas disposal wells three kinds of data will be necessary: (1) seismic data: high-quality, real-time earthquake locations, which require dense seismic instrumentation; (2) geologic data: hydrological parameters, orientation and magnitude of the stress field, and the location and orientation of known faults; and (3) industrial data: injection rates and downhole pressures sampled and reported frequently. This data is not currently available, with the exception of industrial injection data reported to UDOGM, with which to do the analysis.	Mike McKinley	6/07/17
NI	Hydrologic Conditions	The associated surface disturbance from oil and gas development on the proposed leases would have the potential to interrupt surface flow patterns, which could create new channeling of surface runoff from storms and spring snow melt. The construction of well pads, roads and pipelines could interrupt surface runoff and create paths for concentrated surface flow. Impacts to hydrologic conditions could increase sediment loading and associated dissolved solids into streams. As described in water quality above, application of Stipulations UT-S-126 and UT-S-127 is warranted on parcels as listed above (see Water Quality (drinking / ground) for individual stipulations).	Jeffrey Brower	3/3/17
NI	Wetlands /	All parcels contain streams, springs and seeps. However, if avoided as	Jeffrey Brower	3/3/17

Determination	Resource	Rationale for Determination	Signature	Date
	Riparian Zones	stipulated, minimal impacts are anticipated. Stipulations are listed in water quality section.		
NP	Wild and Scenic Rivers	There are no Wild and Scenic Rivers within this project area as per RMP/GIS review.	Jacob Palma	5/8/17
NP	Wilderness & Wilderness Study Areas	There are no Wilderness/WSAs within this project area as per RMP/GIS review.	Jacob Palma	5/8/17
NI	Rangeland Health Standards and Guidelines	Water quality, soils, vegetation, Threatened & Endangered Species habitat and other components of ecological conditions that are considered in Rangeland Health Standards and Guides have been analyzed in the Price RMP. Given the degree of anticipated exploration and development and application of standard operating procedures, best management practices and mitigation applied at the APD stage as conditions of approval it is concluded that Rangeland Health Standards would continue to be met.	Stephanie Bauer	3/9/17
NI	Livestock Grazing	Standard operating procedures, best management practices and site specific mitigation applied at the APD stage as conditions of approval will address livestock grazing resource issues not already analyzed in the Price RMP. Any range improvements such as fences and cattle-guards that would be affected would be replaced or repaired by the applicant. The applicant would replace any barriers to livestock that are removed through field development. AUMs could be lost depending on where development would occur. This could affect 20 permittees. There are eight allotments that would be affected at the APD stage.	Stephanie Bauer	3/9/17

Determination	Resource	Rationale for Determination	Signature	Date
		APD leasing will not have an impact to livestock grazing at this time because no ground disturbance will occur. If development of the leased parcels occur then site specific analysis needs to be completed prior to ground disturbance.		
NI	Woodland / Forestry	Standard operating procedures, best management practices and site specific mitigation applied at the APD stage as conditions of approval will address woodland and forest resources issues not already analyzed in the PFO Proposed RMP/Final EIS. These parcels are not within public wood gathering areas. Leasing will not have an impact to woodland/forestry at this time because no ground disturbance will occur. If development of the leased parcels occur then site specific analysis needs to be completed prior to ground disturbance.	Stephanie Bauer	3/9/17
NI	Soils	SOPs, BMPs and site specific design features including reclamation would be applied at the APD stage as COAs. Leasing and exploration would have minimal impact to soil resources because of the following: Lease Stipulations UT-S-97 and UT-S-101 are applied to all parcels with slopes greater than 40%, and controlled surface use on slopes 20 – 40%. Many parcels include soils that have moderate to high erosion potential. Surface disturbance in these soils could create increased soil erosion. Care in placement of drill pads and access routes is required. <u>Parcels with stipulations</u>: 088, 089, 090, 091, 092, 093, 094, 095, 096, 097, 098, 099, 100, 101, 102: No surface occupancy on slopes greater than 40 percent. UT-S-97	Jeffrey Brower	3/3/17

Determination	Resource	Rationale for Determination	Signature	Date
		088, 089, 090, 091, 092, 093, 094, 095, 096, 097, 098, 099, 100, 101, 102: No surface occupancy on slopes greater than 20 percent. UT-S-101		
PI	Recreation	All of the proposed lease parcels entirely overlap with the San Rafael Swell SRMA. The SRMA has no stipulations identified in the SRMA. There are some portions of the SRMA within parcels 093, 096, 097, 098, 099, 100, 101, and 102 that have a classification of Semi-Primitive Non-Motorized. All of the proposed lease parcels consist of portions of an ROS classification of Semi-Primitive Motorized, and there is a small 258-acre portion of parcel 095 that is classified as Roaded Natural. The potential development that accompanies a lease has the potential to impact the semi-primitive recreation experience of the SRMA. There is also a Recreation Management Zone that overlaps with parcels 096, 097, 099, 101, and 102. This RMZ has the same management goals as the San Rafael Swell SRMA, and potential oil and gas development has the potential to impact the natural and cultural resource values that drive recreation management of the San Rafael Swell SRMA.	Jacob Palma	6/21/17
PI	Visual Resources	The Visual Resource Management (VRM) classes within the proposed lease parcels are within a VRM class II, III and IV. Parcels 096 and 097 have portions that are classified as VRM II. Stipulation UT-S-160 (NSO) would apply to these portions of these parcels. The remainders of the proposed parcels are located in VRM class III and IV, which allows for the level of change to the characteristic of the landscape to be moderate to high. The Visual Resource Inventory identifies VRI class II and III within the proposed parcels. Any future oil and gas exploration and/or development	Jacob Palma	6/21/17

Determination	Resource	Rationale for Determination	Signature	Date
		could cause a change to the scenic quality of the area, potentially impacting the characteristics of the identified VRI classifications.		
NI	Geology / Mineral Resources / Energy Production	The 2008 RMP FEIS adequately address the impacts of oil and gas leasing. Oil and gas exploration could lead to an increased understanding of the geologic setting, as subsurface data obtained through lease operations may become public record. This information promotes an understanding of mineral resources as well as geologic interpretation. While conflicts could arise between oil and gas operations and other mineral operations, these could generally be mitigated under the regulations 3101.1-2, where proposed oil and gas operations may be moved up to 200 meters or delayed by 60 days and also under the standard lease terms (Sec. 6) where sitting and design of facilities may be modified to protect other resources. Mining claims were checked on 03/07/2017, and no claims were found to be associated with these lease parcels. Solid minerals, including coal, were also considered. No coal is present in this area. There is one permitted mineral material pit consisting of 17.5 acres located at N2SW4SE4SE4, W2NW4SE4SE4, E2NE4SW4SE4, NE4SE4SW4SE4, section 31, T. 21 S., R. 8 E., which is within parcel 095. It is a bentonite pit previously issued to a private individual but is currently a community pit controlled and managed by BLM. Any oil and gas development can be managed so as to either avoid, or if necessary, work within this 17.5 acre permit. In conclusion, there will be no negative affects to mineral resources.	Michael Glasson	03/07/2017

Determination	Resource	Rationale for Determination	Signature	Date
		The underground injection of 'fracking waste water' in Utah presents little potential for inducing seismic activity. The majority of fracking waste 'fluids' are recycled and reused for future frack jobs. There have been no reported earthquakes in Utah that were suspected of being produced (induced) from injecting fluids into oil and gas disposal wells. (Personal communication from Brad Rogers, Utah Division of Oil, Gas and Mining ("UDOGM"), August 10, 2015). This fluid is predominantly produced water with a high salt brine content. As stated above in order to analyze and predict the potential for earthquakes associated with oil and gas disposal wells three kinds of data will be necessary: (1) seismic data: high-quality, real-time earthquake locations, which require dense seismic instrumentation; (2) geologic data: hydrological parameters, orientation and magnitude of the stress field, and the location and orientation of known faults; and (3) industrial data: injection rates and downhole pressures sampled and reported frequently. This data is not currently available, with the exception of industrial injection data reported to UDOGM, with which to do the analysis.	Mike McKinley	6/07/17
NI	Paleontology	The Morrison and Cedar Mountain Formations, Potential Fossil Yield Classification System - Class 5 formations, have surface exposure on several of the proposed lease parcels (088-092, 094, 095). Class 5 formations are defined as geologic units that are highly fossiliferous and consistently and predictably produce vertebrate fossils. The PFO RMP ROD Management Decisions PAL-1 and PAL-4 for paleontologic resources requires that a BLM-permitted paleontologist be on site prior to and during any surface disturbing activities. This includes roads, pads, pump stations, pipelines, etc. A pre-work survey by a paleontologist will be necessary. Mitigation can be avoidance or excavation by BLM-permitted paleontologists. Site specific mitigation will be applied at the APD level. UT-S-176 & UT-S-177 are applied to parcels 88-92, 94, and 95.	Michael Leschin	03/02/2017

Determination	Resource	Rationale for Determination	Signature	Date
NI	Lands / Access	As described, the Proposed Action would not affect access to public land. Off-lease ancillary facilities that cross public land, if any, may require separate authorizations. Subsequent projects should coordinate with existing ROW holders and apply operating procedures and site specific mitigation at the APD stage that would ensure protection of existing rights.	Connie Leschin	3/27/2017
NI	Fuels / Fire Management	At this stage (lease sale) there are no impacts to Fuels/Fire Management. Impacts (both direct and indirect) would occur when the lease is developed in the future. The potential impacts would be analyzed on a site-specific basis at the APD stage prior to development. Fuels vary from lease to lease but generally consist of Ponderosa Pine, Pinyon Juniper, Sage Brush, small shrubs and forbs and grasses.	Stuart Bedke	5/16/2017
NI	Socio-economics	The nominated parcels are located in rural areas with no commercial and minimal residential development. No impacts to socio-economics are expected to occur as a result of the Proposed Action.	Jake Palma	5/8/17
NI	Wild Horses and Burros	As per review of GIS and RMP maps, several of the identified parcels lie within Wild Horse or Burro Herd Management Area (HMA) Boundaries managed by the Price Field Office. Specifically parcels 085 through 101 lies within the Muddy Creek Wild Horse HMA. However being North of Interstate 70 it is within a portion of the HMA that is not inhabited by horses.	Mike Tweddell	03/28/2017
NP	BLM Natural Areas	There are no BLM Natural Areas within this project area as per RMP/GIS review.	Jacob Palma	5/8/17

Determination	Resource	Rationale for Determination	Signature	Date
NP	Coal	The Proposed Action will not negatively affect coal resources; there are no coal resources located within this O&G leasing block.	Michael Glasson	03/27/2017
PI	Lands with Wilderness Characteristics	The proposed lease parcels overlap with two lands with wilderness characteristics inventory units: Eagle Canyon and Sids Mountain. The Eagle Canyon inventory unit has 26,181 acres (82% of the unit) overlap with the proposed lease parcels. The Sids Mountain inventory unit has 4,059 acres (99.9% of the unit) overlap with the proposed lease parcels. Because leasing is an irretrievable commitment of resources, it is anticipated that the potential oil and gas exploration and development subsequent to leasing will impact lands with wilderness characteristics because there would be an impact to the area's naturalness, opportunities for solitude, and/or opportunities for primitive and unconfined recreation.	Jacob Palma	6/21/17
NI	Wildlife: Migratory birds (including raptors)	A resource list from IPaC was reviewed for potential species in the area. Each species was evaluated in detail. Refer to the Wildlife and Botany resources report June 2017. There is potential for raptor nest locations and migratory bird breeding habitats within selected parcels. Lease stipulations and notices are added to those parcels to reduce any future project's impacts. Site-specific effects cannot be analyzed until an exploration or development application is received, after leasing has occurred. Lease Notice UT-LN-45, and UT-S-285 is attached to all parcels (Migratory Birds). Lease Notice UT-LN-44 , and UT-S-260 is attached to all parcels (Raptors). The effects of the oil and gas leasing actions with the associated stipulations mentioned above on migratory birds and raptors was	Dana Truman	06/14/2017

Determination	Resource	Rationale for Determination	Signature	Date
		analyzed in the 2008 PFO RMP. Implementing seasonal closures may provide temporary refuge for special status species in those areas sensitive to activity and noise. Applying a no surface disturbance buffer zone around nest sites could minimize disturbances to special status species and their habitat occupying these areas.		
NI	Wildlife: Fish (designated or non-designated)	There are no BLM sensitive aquatic species (including their associated habitats) within or near the parcels. Therefore, detailed analysis is not required. Water depletions from any portion of the Upper Colorado River drainage basin above Lake Powell are considered to adversely affect or adversely modify the critical habitat of the four resident endangered fish species - bonytail (*Gila elegans*), humpback chub (*Gila cypha*), Colorado pikeminnow (*Ptychocheilus lucius*), and razorback sucker (*Xyrauchen texanus*). Formal consultation with USFWS is required for all depletions. All depletion amounts must be reported to BLM. As analyzed in the RMP and the BO, the application of the following LN allows for the opportunity to make adjustments at the site-specific level when an APD is received to reduce potential effects to the species. Notice T&E-03 is applied to all parcels (ENDANGERED FISH OF THE UPPER COLORADO RIVER DRAINAGE BASIN).	Jerrad Goodell	4-3-17
PI	Wildlife: BLM Sensitive	The BLM-Utah sensitive species list (2011) was reviewed; Each species was evaluated in detail. Refer to the Wildlife and Botany resources report June 2017. Based on the review there is potential habitat for white-tailed prairie dogs, Kit Fox and possibly burrowing owls and short-eared owls within the parcels nominated for leasing.	Dana Truman	05/15/2017

Determination	Resource	Rationale for Determination	Signature	Date
		The 2014 habitat model for kit fox indicates a high probability of kit fox occurrence within the parcels identified for leasing. Long-billed curlew, Ferruginous hawks, and bald eagles may fly through the area during migration. Several of the BLM sensitive Bat species may use the area According to the GRSG ARMPA, PHMA, and GHMA layers in 2017 no mapped or designated sage grouse habitat occurs within the proposed lease area. The nearest PHMA is greater than 10 miles from the parcels. Site visits to each parcel and review of soils and vegetation GIS layers confirmed the lack of sagebrush and suitable habitat for sage grouse within the proposed lease area. No effects to sage grouse expected. UT-LN-25 (White-tailed Prairie dogs) is attached to all parcels UT-LN-104 (Burrowing Owl Habitat) is attached to all parcels. UT-LN-49 (BLM Sensitive Species) is attached to all parcels UT-S-260 (Raptors) is attached to all parcels UT-S-285 (Migratory Bird Nesting) is attached to all parcels The effects from Oil and Gas leasing were analyzed in the 2008 PFO RMP. At the APD stage site specific conditions of approval may be added to reduce or eliminate impacts to BLM sensitive species.		

Determination	Resource	Rationale for Determination	Signature	Date
NI	Wildlife: Non-USFWS Designated	Big game species and other game species managed by the UDWR evaluated in detail. Refer to the Wildlife and Botany resources report June 2017. Some of the parcels are identified by the UDWR as crucial year round habitat for desert bighorn sheep (UDWR 2008) and the Price RMP Map R-8. UT-LN-21 (PFO) BIGHORN SHEEP HABITAT and UT-S-253: Desert Bighorn. Parcels- 96, 97, 99, 101, 102 No designated habitat for deer, elk, pronghorn antelope, within the parcels according to the recent UDWR shapefiles and the Price RMP. There are no fish species (including their associated habitats) within the parcels. Several toad species could occur. The impacts to them are avoided by the stipulations listed in the hydrologic conditions, and water quality sections. Some of the parcels are identified by the UDWR as crucial year round habitat for desert bighorn sheep (UDWR 2008) and the Price RMP Map R-8. Development of the leases would not fragment the identified habitat because the parcels just encompasses the outer edge of the identified habitat. Within the entire area requested for lease in the PFO, there are 5,335 ac of crucial yearlong habitat for desert bighorn sheep. The habitat within the parcels is limited by suitable cliff habitat and available water sources as evident by the location at the outer edge of the designated habitat. The implementation of stipulations to avoid lambing seasons would eliminate potential disturbance during a crucial time period. Application of the lease notice will provide the opportunity at the development stage to reduce potential impacts to the species.	Dana Truman	5/15/2017

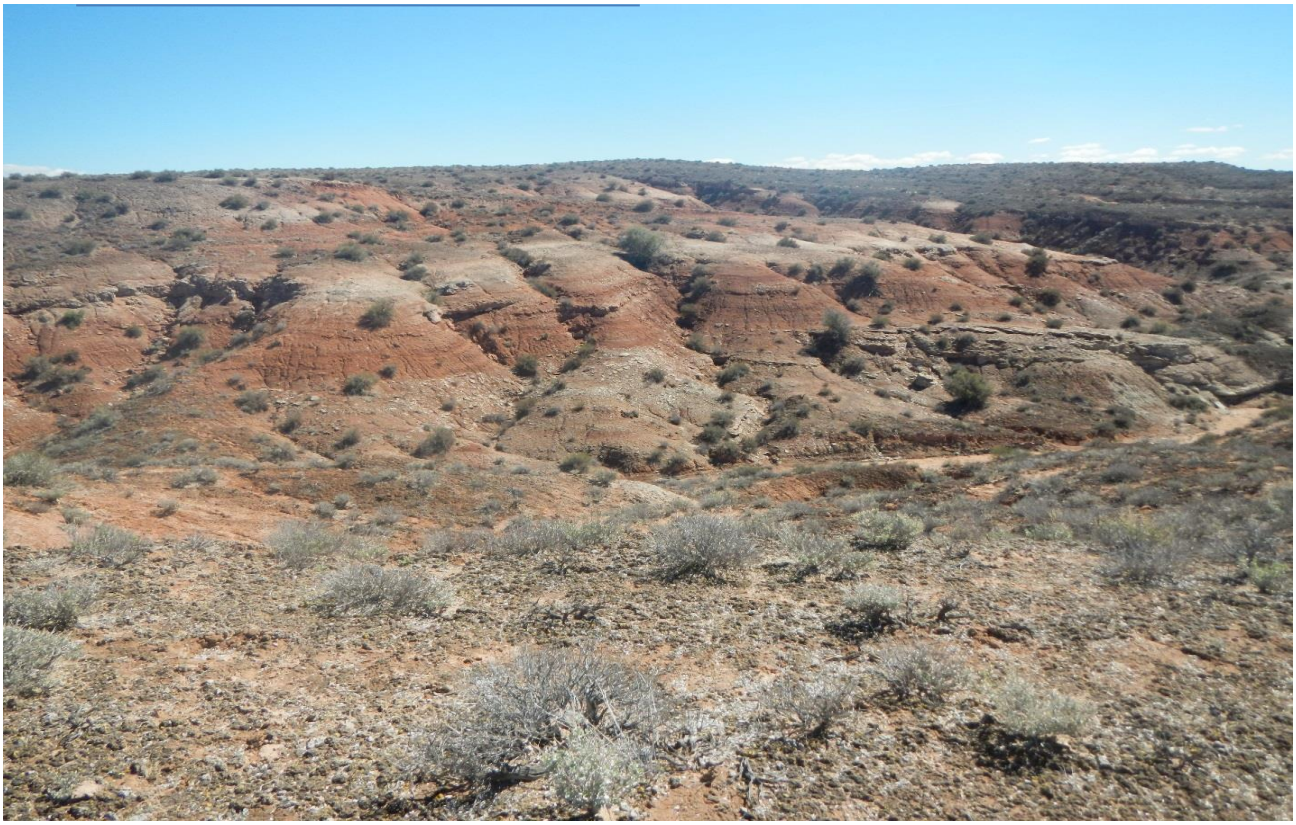
Determination	Resource	Rationale for Determination	Signature	Date
NI	Wildlife: Threatened, Endangered, Proposed or Candidate	A resource list from IPaC was reviewed for potential species in the area. Each species was evaluated in detail. Refer to the wildlife resources report June 2017. Some modeled Mexican Spotted Owl habitat occurs near the parcels requested in 2017 (1 small area is approximately 1 mile away, other areas are over 2 miles away). No modeled habitat is located within the parcels, based upon Willey's 2000 GIS model. No critical habitat for MSO as designated by the USFWS occurs within the parcels. No other listed or proposed animal species would be expected to potentially occur within these parcels. No critical habitat for any other USFWS ESA listed species occurs in the parcels. Until there is a site-specific proposal, there is no action directly or indirectly causing modifications to the land, water, or air, therefore "no effect" on any listed animal species or designated critical habitat.	Dana Truman	6/14/2017

FINAL REVIEW:

Reviewer Title	Signature	Date
Environmental Coordinator	*unsigned*	--
Authorized Officer	*unsigned*	--

Appendix G – Parcel Pictures

2017 O&G Lease Sale Parcel Pictures



Oil & Gas Parcel #88 ↑

Oil & Gas Parcel #89 ↑

Oil & Gas Parcel #90 ↑

Oil & Gas Parcel #91 ↑

Oil & Gas Parcel #92 ↑

Oil & Gas Parcel #93 ↑

Oil & Gas Parcel #94 ↑

Oil & Gas Parcel #95 ↑

Oil & Gas Parcel #96 ↑

Oil & Gas Parcel #97 ↑

Oil & Gas Parcel #98 ↑

Oil & Gas Parcel #99 ↑

Oil & Gas Parcel #100 ↑

Oil & Gas Parcel #101 ↑

Oil & Gas Parcel #102 ↑